

**Environmental Assessment
for
American Colloid Company**

**Amendment #11 to Plan of Operations
MTM 77811**

EA No. MT-020-2007-194

**Bureau of Land Management
Miles City Field Office
and
Montana Department of
Environmental Quality**

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Abbreviation and Acronyms

ACC	American Colloid Company
AML	Abandoned Mine Land
AMP	Allotment Management Plan
AUMs	Animal Unit Months
BLM	Bureau of Land Management
BMP	Best Management Practices
BPM	Bentonite Performance Minerals
BS/WW	Big Sagebrush/Western Wheatgrass
dB	Decibels
CO	Carbon Monoxide
EA	Environmental Assessment
ECS	Ecological Consulting Service
IMC	International Minerals and Chemical Corporation
DEQ	Montana Department of Environmental Quality
MEPA	Montana Environmental Policy Act
MOU	Memorandum of Understanding
MSHA	Mine Safety and Health Administration
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
RFD	Reasonable Foreseeable Development
SCD/BUD	States Sufficient Credible Data/Beneficial Use Data
TSP	Total Suspended Particulates
TSS	Total Suspended Solids
VOC	Volatile Organic Compounds
VRM	Visual Resource Management

Chapter 1

Purpose of and Need for the Proposed Action

1.1 Introduction

American Colloid Company (ACC) has submitted an amendment (Amendment #11) to its existing Plan of Operations MTM77811 and State of Montana Mined Land Reclamation Permit #00297 for mining bentonite (Figure 1.1).

The ACC project area lies within a larger mining region in which two companies operate. The Amendment #11 project area lies within ACC's Alzada North (Permit #00297) mine area. Most of the mine related disturbances in this area are north of the Ridge Road, within the Willow Creek watershed. The other mine area within the region is the Alzada South mine area, which is located south of the Ridge Road and is within the Thompson Creek watershed.

ACC, with offices located in Belle Fourche, South Dakota, has been mining bentonite in the Alzada, Montana area under State of Montana Mined Land Reclamation Permit #00297 (Alzada North) since 1977. As active areas have been mined out, reclaimed and removed from the permit over the years, additional acreages have been added through ten amendments to the permit.

Permit #00297 currently contains 5,224 acres. (Figure 1.1) Approximately 2,014 acres have been disturbed by mining within the current permit boundaries – 1,496 acres have been reclaimed through the seeding stage and about 518 acres are currently under some phase of mining. In addition, 1,466 acres have been fully released from bond and removed from the permit, 323 acres of which were disturbed and reclaimed.

Approximately 1,941 acres in the permit are federally owned and administered by Bureau of Land Management (BLM) and 3,283 acres are privately owned (Figure 1.2).

Amendment #11, if approved as submitted, would increase the permit by 567.5 acres, of which 299.8 acres would be federal (BLM) surface and 267.7 would be private surface. All lands within the permit boundary are not allowed to be disturbed. Only those lands which are specifically designated for mining or mine related purposes or authorized by a right-of-way are allowed to be disturbed. Those areas are designated in the mine plans which accompanied the amendment application and are considered to be a part of the BLM's Plan of Operations for the mine if approved or approved as modified via the decision resulting from this EA.

The proposed disturbed area associated with Amendment #11 would total approximately 160 acres of which 92.9 acres are BLM surface and 66.8 acres are private surface over a 5-year life of mine.

The permit area includes both private and federal lands, therefore the mining is regulated by both the Bureau of Land Management and the Montana Department of Environmental Quality. BLM and DEQ have determined that one Environmental Assessment (EA) will be prepared to satisfy requirements of both the National Environmental Policy Act (NEPA) and Montana Environmental Policy Act (MEPA).

1.2 Agency Roles and Responsibilities

The preparation of this EA was done by both the BLM and DEQ acting as co-leads. As co-leads, the agencies were responsible for conducting the scoping meetings, developing the alternatives, coordinating with the proponent, conducting the analysis, collecting public comments and conducting consultations. The co-lead also ensures that the analysis and resulting document fulfills each agency's needs as required by the various Federal and State acts, laws, and regulations that pertain to the project.

Figure 1.1 Area Guide Map

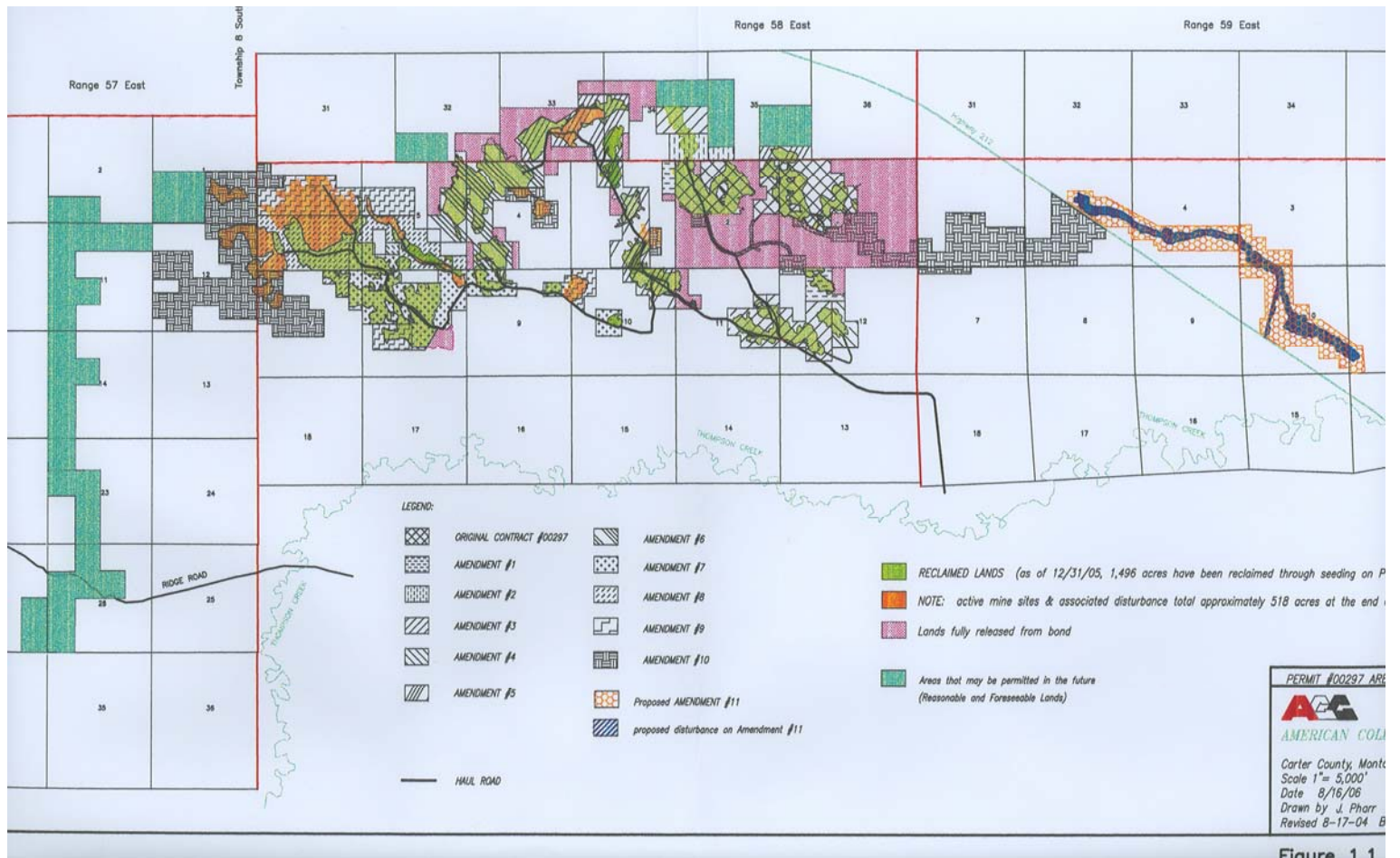
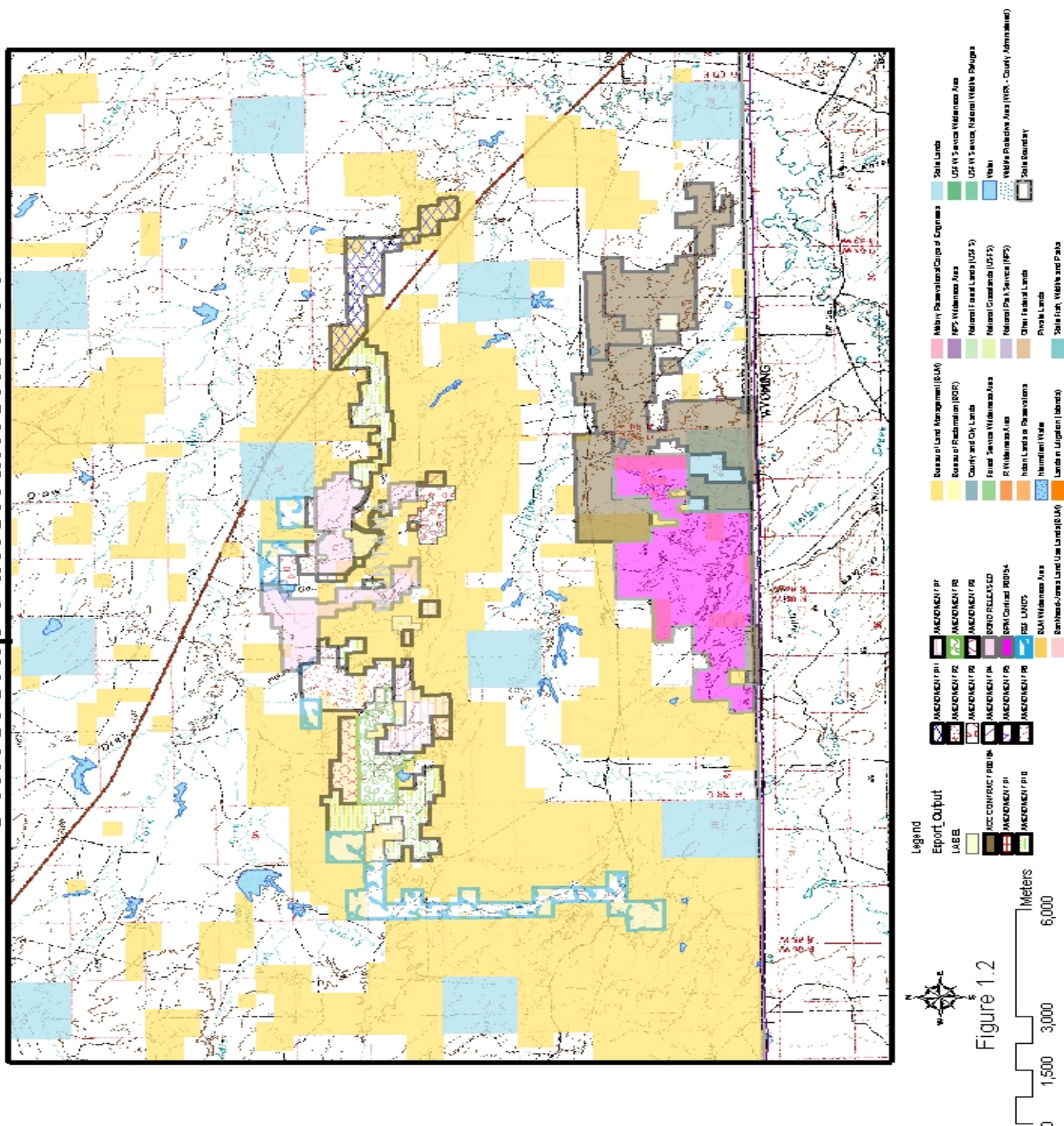


Figure 1.1

Figure 1.2 Surface Ownership



Bureau of Land Management

Bentonite is a clay mineral and has been determined to be locatable under the general mining laws of 1872. The right to mine and the ownership of the bentonite on federal and some split estate lands is obtained by filing and maintaining mining claims. The federal regulations, which are used to regulate locatable mineral exploration and development on BLM administered public lands are called the Surface Management of Mining Claims Under the General Mining Laws, found at 43 CFR 3809, which are commonly referred to as the “3809” regulations. These regulations require mining claimants and /or operators to submit a Plan of Operations (for disturbances greater than 5 acres) for BLM’s review and approval. The plan must contain detailed information about the mining proposal and protective measures so that “Unnecessary or Undue” degradation does not occur to the Federal lands. The operator must also comply with the performance standards set forth in 43 CFR 3809.420.

The Federal authority for locatable minerals, under the surface management regulations, extends only to Federally owned surface or to some split estate lands, obtained under the Stock Raising Homestead Act.

The regulations at 43 CFR 3809.411 directs BLM to prepare an environmental review under NEPA for a new Plan of Operations or a substantial modification to an existing plan.

The following authorities are used to process and evaluate bentonite mining applications: the NEPA of 1969; the Environmental Quality Improvement Act of 1970. These acts and policies provide BLM with the authority to manage and administer public lands. Additional guidance and regulations are set forth in the 40 CFR 1500 regulations (Protection of Environment), 43 CFR 1601 (Planning, Programming and Budgeting), and 43 CFR 3809 (Surface Management).

State of Montana Department of Environmental Quality

The legislation that regulates and controls gravel and bentonite mining operations in Montana is the Opencut Mining Act. This law and its approved rules place operational guidance and limitations on a project during its life, and provides for the reclamation of land subjected to opencut materials mining. The basic standard is that, post-mining, the land would be stable and meet its beneficial use, which is usually designated by the landowner.

Under the Act, all lands, even federal lands are regulated and must meet its requirements. The State and the BLM have signed a Memorandum of Understanding (MOU) under which we jointly regulate federal land under BLM jurisdiction. That MOU is presently being modified to account for recent changes in both state and federal laws, but those MOU discussions would not interfere with the agencies’ ability to analyze and render a decision on ACC’s Amendment #11 application.

The Act requires that a reclamation bond, cash deposit or other financial instrument be submitted to the state to cover the complete costs of reclaiming the site to its approved, post-mining land use.

The permit or amendment decision is based upon whether or not the proponent has met the requirements of the Opencut Mining Act, pursuant rules, and other laws pertaining to the proposed action.

1.3 Purpose and Need for the Document

Amendment #11 involves adding 567.5 acres to the existing plan, of which 299.8 acres are BLM surface and 267.7 acres are private surface.

Amendment #11 lands are located three to six miles northwest of Alzada, immediately north of Highway 212 and along the south/southwest facing flanks of a prominent ridge system. Access is directly onto Highway 212 at an existing approach.

Proposed mining will affect approximately 160 acres on Amendment #11 over a period of 5 years or less.

The purpose of the proposed action is to provide for a continuation of orderly, efficient and environmentally responsible mining of the bentonite resource. These lands are open to mineral entry, and valid mining claims have been filed on these lands. The mining claimant has the right to mine and develop the mining claims as long as it can be done without causing unnecessary or undue degradation and it is in accordance with pertinent laws and regulations. Amendment #11 will allow ACC to mine bentonite reserves as part of the logical mine progression from existing operations.

Bentonite is an important industrial mineral. The proposed action is needed in order to meet customer clay needs. The various grades of bentonite have different uses; therefore, a company may have pits open simultaneously in more than one area and in different bentonite beds.

The legal descriptions of the land contained in Amendment #11 can be found in Appendix 1.

1.4 Other Relevant Environmental Documents

- Powder River Resource Area Resource Management Plan of 1985 (PRRA RMP). This EA is in conformance with and tiered to the PRRA RMP FEIS.
- EA No. MT-020-99-216 for American Colloid Company Amendment #9 to Plan of Operations MTM77811, March, 2001.
- EA No. MT-020-2004-176 for American Colloid Company Amendment #10 to Plan of Operations MTM77811, July, 2005.
- FEIS, Proposed Open Cut Mining

Contract for American Colloid Company, Montana Department of State Lands, 1976.

1.5 BLM Decisions Required

BLM decision options regarding ACC's proposed amendment include approving it as submitted, approve it subject to mitigation, or deny or withhold approval of the amendment application if it is found that the proposal would result in unnecessary or undue degradation of the public lands (No Action Alternative).

1.6 DEQ Decisions Required

The DEQ decision options would include approving the amendment as submitted, approving as modified, or denying it if it is found that mining could not be done in compliance with the Opencut Act.

1.7 Federal, State and Local Permits; or Required Consultations

Mined Land Reclamation Permit #00297, as amended

DEQ Open Cut Bureau authorizes activities on private, State, and Federal Lands such as sand and gravel and bentonite mining as required by the Opencut Act.

BLM Plan of Operations MTM77811, as amended

The BLM, Miles City Field Office authorizes mining activities on Federal surface estate, pertaining to locatable minerals such as bentonite via the authority found in federal regulations at 43 CFR 3809 "Surface Management of Mining Claims Under the General Mining Laws". The BLM generally does not have authority to regulate locatable mineral mining on private surface.

Storm Water Discharge Permit

DEQ authorizes construction activities that may impact State Waters under the General Permit for Storm Water Discharges Associated Construction Activity Permit. ACC has

obtained storm water discharge permit #MTR300103 from DEQ.

SHPO Consultation

Pursuant to the “1997 Programmatic Agreement Among BLM, SHPO and ACHP Regarding the Manner in which BLM will meet its Responsibilities Under the National Historic Preservation Act”, the PA gives authority to BLM to make the determination of whether cultural properties may be affected by this undertaking as defined in Section 301(7) of the National Historic Preservation Act.

In addition, pursuant to Montana BLM’s “Guidelines For Identifying Cultural Resources” Handbook H-8110 (Draft April 2000), Part II.B regarding “When Inventory is Needed”, Criteria B stipulates that an appropriate level of inventory and evaluation must be conducted prior to authorizing, or assisting of funding any land use activity which may affect cultural resources. Findings indicate that Class III inventories, encompassing the undertakings’ Areas of Potential Effect, are adequate to demonstrate that no cultural resources exist in the Areas of Potential Effect for this undertaking and that all of the undertakings’ activities will occur within adequately inventoried areas.

Tribal Consultation

A letter describing ACC’s proposed mining activities for Amendment #11 was sent to a list of nineteen Native American Tribes, Tribal Historic Preservation Officers, Tribal legal councils and Tribal Cultural Resource representatives on January 29, 2007. The list

of Tribes notified included the Northern Cheyenne, Crow, Fort Peck Tribes, Lower Brule Sioux, Rosebud Sioux, Pine Ridge Sioux, Cheyenne River Sioux, Standing Rock Sioux, Eastern Shoshone, Northern Arapahoe, Blackfeet, Fort Belknap, Chippewa-Cree of the Rocky Boy Reservation and the Three Affiliated Tribes of the Fort Berthold Reservation. Responses were received from only two Tribes, the Rosebud Sioux Tribe by letter registering an objection to the undertaking by stating that “At this time we have concerns for this project to proceed as planned. The Rosebud Sioux Tribe objects to any kind of mining” and by telephone call from the Fort Peck Tribes stating they had concerns for sites in the area and asked to arrange for a meeting.

A meeting was held with Curly Youpee, Director of the Cultural and Historical Resources Committee of the Fort Peck Tribes, on March 13, 2007, with representatives of BLM’s Miles City Field Office to further explain in detail the proposed undertaking.

The meeting concluded with the Fort Peck Tribes not opposed to the proposed mining and asking for some additional ethnographic information of the area, BLM’s current burial policy and a stipulation to be included in the Decision Record specifying how to treat incidental finds of burials and cultural materials.

Chapter 2

Alternatives, Including the Proposed Action

2.1 Introduction

This chapter discusses the Proposed Action and Alternatives. Descriptions of current environmental resources at the American Colloid Company bentonite mine and potential impacts on these resources resulting from the Proposed Action and alternatives are presented in Chapters 3 and 4, respectively. Mitigation measures are identified as a result of the impact analysis and are a part of the Alternative.

2.2 Development of Alternatives

Alternatives present different management options in response to the purpose and need for the proposed action and address the relevant major issues related to the proposed action.

2.3 Proposed Action (Alternative A)

Amendment #11 involves adding 567.5 acres (299.8 acres on BLM surface and 267.7 acres on private surface) to ACC's existing 5,224-acre Permit #00297 in the Alzada North area. (Figure 1.1)

Amendment #11 lands are located three to six miles northwest of Alzada, immediately north of Highway 212 and along the south/southwest facing flanks of a prominent ridge system. Access is directly onto Highway 212 at an existing approach.

Mining on Amendment #11 will occur in four proposed pit sequences. Approximately 160 acres will be affected by ACC's proposed mine plan over 5 years or less, with approximately 92.9 acres to be affected on BLM surface and 66.8 acres on private surface. Mining schedules and the sequence of the pits to be stripped will depend upon customer needs. Reclamation will occur in conjunction with mining and immediately following mining.

The ACC mining operation will consist of stripping several small pits and backfilling one into the other. New haul road segments will be constructed over non-maintained existing trails and over backfilled pits or proposed pits within the mining sequences. Any newly constructed road spurs will be reclaimed. No permanent main stretches of haul road are proposed.

ACC will surface mine to an estimated maximum depth of 50 feet, although in many places, the bentonite outcrops near the surface.

The following equipment will be most commonly used in ACC's mining operations: Caterpillar 637 Scrapers, Caterpillar D-9 Dozers, Caterpillar 988 Front-end loaders, Caterpillar patrol/blade, haul trucks and water wagons.

Topsoil from all affected areas will be salvaged with rubber-tired scrapers prior to disturbance. The depth of topsoil salvage depends on the type and availability of soil and ranges from 0 to 12 inches, as determined by a professional soils survey conducted over the project. Topsoil and subsoil for areas designated as temporary overburden stockpiles, haul road segments and pits will be stockpiled. These materials will be clearly marked with signs reading "Topsoil" and "Subsoil". Topsoil and subsoil not stockpiled will be direct-hauled (livespread) onto previously backfilled and contoured areas. Prior to spreading topsoil, all compacted areas will be ripped with shanks attached to the D-9 Cat or patrol/blade. Ripping will be from 10 to 12 inches deep and done in two passes at right angles. This procedure has been used for several years and has proven to be an effective reclamation procedure.

The soils survey identified some rock outcrop areas in the proposed mining area. It was recommended that these areas not be salvaged and that they not be used as surface

reclamation materials.

Overburden from each pit will be ripped with a D-9 dozer and stripped using scrapers. It will be temporarily stockpiled or backfilled into a previously opened pit except in one area of the project where overburden will be blended into the side of a ridge. Bentonite will be removed and either stockpiled with scrapers or extracted from the pit with front-end loaders and loaded onto haul wagons and haul trucks, which will haul the bentonite to ACC's processing plants at Colony, Wyoming.

Open pits will be backfilled in a "tier" system. Generally, the material found lowest in the pit is the poorest quality for revegetation and is replaced in the bottom of the pit. When the final contour configuration is approached, the tiers would be blended to approximate surrounding topography. Past experience has shown that overburden swells sufficiently due to breaking up of the platy shale to compensate for bentonite removal. As a result, the post-mine contours will be approximately equal to the original contours and will be suitable to the post-mine land use of livestock grazing and wildlife habitat.

During the reclamation phase of the operation, after the pits are backfilled and contoured, subsoil and topsoil will be respread. This will be followed by either ripping with a motor patrol or immediately seeding with a modified chisel plow/range seeder. This method provides an uncompacted, moderately rough seedbed which reduces erosion and traps moisture in the furrows for vegetation establishment.

If any solid waste is generated during mining operations, it will be disposed of at ACC's permitted landfill on a biweekly basis.

Protective berms will isolate mining disturbance from undisturbed areas and help reduce the amount of storm water run-on which enters a mining area; controlling the run-on will help reduce run-off.

In accordance with the American Colloid Company (ACC) Amendment #11 Application and Plan of Operations, a right-of-way would be issued under the authority of Title V of the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2776; 43 U.S.C. 1761) in the SW¹/₄NE¹/₄, SE¹/₄NW¹/₄, E¹/₂SW¹/₄, Section 10, T. 9 N., R. 59 E., to the grazing permittee(s) for the existing bladed and graveled ranch road. The right-of-way would be approximately 2,931 feet long and 30 feet wide, consisting of 2.02 acres, more or less. The right-of-way would be constructed, used, maintained, and terminated in conformance with ACC's Amendment #11 Application and Plan of Operations and applicant's right-of-way application and subject to the stipulations in Appendix 2. The right-of-way would be subject to cost recovery and rental and would be issued for a term of thirty years and be renewable.

2.4 Alternative A – No Action

BLM

The No Action Alternative involves rejecting the amendment in its entirety. The Agencies could deny or withhold approval of the amendment application if it is found that the proposal would result in unnecessary or undue degradation of the public lands or could not comply with the measures found in the Opencut Act. This alternative represents the status quo. Mining under the current plan would still occur until permitted reserves are exhausted.

Chapter 3

Affected Environment

3.1 Introduction

Several baseline investigations have been completed on Amendment #11 lands and in the area to characterize environmental resources. This chapter provides a summary of those investigations and a brief history of mine activities in the study area. In the following sections, "project area" refers to the general area surrounding project components associated with the existing mine and RFD areas. The general project area is shown on Figure 1.1. Study area boundaries for each discipline are based on where potential direct and indirect impacts are likely to occur. In addition to issues and concerns brought out in the public scoping process, the NEPA, and CEQ, regulations, BLM policy and DEQ regulations require that potential impacts be addressed for the following critical elements:

- Wetlands/Riparian Zones
- Air Quality
- Farmlands, Prime/Unique
- Floodplains
- Water Quality
(drinking/surface/ground)
- Threatened and Endangered Species
- Cultural Resources
- Areas of Critical Environmental Concern
- Wild and Scenic Rivers
- Wilderness Areas
- Native American Religious Concerns
- Hazardous Materials/Waste
- Environmental Justice
- Invasive, Nonnative Species

Of the fourteen critical elements required to be addressed, floodplains, prime and unique farmlands, areas of critical environmental concern, wild and scenic rivers, and wilderness areas do not occur within the project area and will not be discussed further.

3.2 Mine History

ACC, has been mining bentonite by surface mining methods in the Alzada North area since 1977 and currently has about 5,224 acres under permit (Permit #00297) with the State of Montana. About 2,014 acres have been disturbed by mining within the current permit boundaries - 1,496 acres have been reclaimed through the seeding stage and about 518 acres are currently under some phase of mining. In addition, 1,466 acres have been released from the bond and removed from the permit, 323 acres of which were disturbed and reclaimed. About 1,941 acres in the permit are administered by BLM (Figure 1.2).

3.3 Location and Topography

The project area is located in Carter County, in the southeast corner of Montana. The Amendment #11 application area is three to six miles northwest of the small town of Alzada and immediately north of Highway 212. The area is also about four miles north of the Wyoming border.

Amendment #11 lands lay along the flanks of a prominent northwest/southeast oriented ridge system that runs parallel to Highway 212. The landscape exhibits various erosional remnants, such as cuts and eroded ridge slopes. Drainage is by ephemeral channels in a generally south/southeasterly direction. Thompson Creek is located south of Highway 212, approximately ½ mile from Amendment #11 at the nearest point.

Elevations range from approximately 3,440' on the east side of the Amendment to approximately 3,580' on the west side of the Amendment.

3.4 Climate

The climate of the area is one of extremes. In 1975, the low temperature was –30 degrees F recorded in January; the high was 108 degrees F recorded in July. In 1989, the low temperature was –43 degrees F recorded in December; the high was 106 degrees F recorded in July. Precipitation is

likewise erratic, ranging from a low of 7.8 inches recorded in 1952 to 21 inches in June and July, 1993 (National Weather Service, National Climatic Data Center, Asheville, North Carolina). Average annual rainfall is 10-15 inches. Winds are generally from the northwest and are subject to wide fluctuations.

Precipitation Records (National Climatic Data Center)

<u>Year</u>	<u>Total Precipitation (in inches)</u>
1995	19.2
1996	17.9
1997	12.2
1998	15.0
1999	17.5
2000	13.5
2001	22.5
2002	9.1
2003	12.2
2004	15.6
2005	16.9

(from National Climatic Data Center, reporting station in Albion, MT and Larry Pilster, local rancher)

3.5 Air Quality

Under the Clean Air Act of 1970, and amended EPA developed primary and secondary National Ambient Air Quality Standards (NAAQS) for each of the seven criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, fine particulate matter and sulfur dioxide. These standards establish pollution levels in the United States that cannot legally be exceeded during a specified time period.

Primary standards are designed to protect human health, including "sensitive" populations, such as people with asthma and emphysema, children and senior citizens. Primary standards are designed for the immediate protection of public health, with an adequate margin of safety, regardless of cost.

Secondary standards are designed to protect public welfare, including soils, water, crops, vegetation, buildings, property, animals, wildlife, weather, visibility, and other economic, aesthetic and ecological values, as well as personal comfort and well-being. Secondary standards were established to protect the public from known or anticipated effects of air pollution.

Montana has adopted additional state air quality standards. These Montana Ambient Air Quality Standards (MAAQS) establish statewide targets for acceptable amounts of ambient air pollutants to protect human health. A list of these standards are included in Table 3.5-1.

NAAQS and MAAQS establish upper limits for concentrations of specific air pollutants. Incremental increases in the ambient concentration of criteria pollutants are regulated under the Prevention of Significant Deterioration

(PSD) program. The program is designed to limit the incremental increase of specific air pollutants above a legally defined baseline level, depending on the classification of a location. Incremental increases in PSD Class I areas are strictly limited, while increases allowed in Class II areas are less strict. The project area and surrounding areas are classified as PSD Class II.

NEPA analysis comparisons to PSD Class I and II increments are intended to evaluate a threshold of concern, and do not represent a regulatory PSD increment consumption

analysis. The determination of PSD increment consumption is an air quality regulatory agency responsibility.

Pollutants are limited within the project area, with only a few industrial facilities and residential sources in the small communities and isolated ranches. In addition, the good atmospheric dispersion conditions in the project area typically result in low concentrations of criteria air pollutants. These factors generally contribute to relatively low ambient air pollutant concentrations.

Table 3.5-1 National and Montana Ambient Air Quality Standards

Pollutant	Time Period	Federal	Montana
Carbon Monoxide	Hourly Average	35 ppm ^a	23 ppm ^a
	8-Hour Average	9 ppm ^a	9 ppm ^a
Fluoride in Forage	Monthly Average		50 mg/g ^b
	Grazing Season		35 mg/g ^b
Hydrogen Sulfide	Hourly Average		0.05 ppm ^a
Lead	90-Day Average		1.5 mg/m ^{3 b} (rolling)
	Quarterly Average	1.5 mg/m ^{3 b} (calendar)	
Nitrogen Dioxide	Hourly Average		0.30 ppm ^a
	Annual Average	0.053 mg/m ³	0.05 ppm ^b
Ozone	Hourly Average	0.12 ppm ^c	0.10 ppm ^a
PM-10 (existing)	24-Hour Average	150 mg/m ^{3 d,j}	150 mg/m ^{3 d,j}
	Annual Average	50 mg/m ^{3 e}	50 mg/m ^{3 e}
PM-10 (revised)	24-Hour Average	150 mg/m ^{3 f,j}	
	Annual Average	50 mg/m ^{3 e}	
PM-2.5	24-Hour Average	65 mg/m ^{3 g,j}	
	Annual Average	15 mg/m ^{3 h}	
Settleable Particulate	30-Day Average		10 g/m2 ^b
	Hourly Average		0.50 ppm ⁱ
Sulfur Dioxide	3-Hour Average	0.50 ppm ^k	
	24-Hour Average	0.14 ppm ^{j,k}	0.10 ppm ^{a,j}
	Annual Average	0.03 ppm ^k	0.02 ppm ^k
Visibility	Annual Average		3 X 10 ⁻⁵ /m ^k

Source: <http://www.deq.state.mt.us/ppa/mdm/air/citguide/appendixb.html>

a. Federal violation when exceeded more than once per calendar year.

b. Not to be exceeded (ever) for the averaging time period as described in the regulation.

- c. Not to exceed more than once per year averaged over 3-years.
- d. Violation occurs when the expected number of days per calendar year with a 24-hour average above this concentration is more than one.
- e. Violation occurs when the expected annual arithmetic mean concentration is above this concentration.
- f. To attain this standard, the 99th percentile of the distribution of the 24-hour concentrations for one year, averaged over three years, must not exceed this concentration at each monitor within an area.
- g. To attain this standard, the 98th percentile of the distribution of the 24-hour concentrations for one year, averaged over three years, must not exceed this concentration at each monitor within an area.
- h. To attain this standard, the 3-year average of the annual arithmetic mean of the 24-hour concentrations from a single or multiple population oriented monitors must not exceed this concentration.
- i. State violation when exceeded more than eighteen times in any 12 consecutive months.
- j. The standard is based upon a calendar day (midnight to midnight).

3.6 Hydrology

3.6.1 Groundwater

Based on exploratory drilling, no important groundwater is known to exist above the deepest projected depth of mining. Natural saline seeps are common to the area, which are usually the result of pockets of perched water tables overlying impermeable shales. These seeps are particularly evident in years of higher precipitation as water migrates over the impermeable layer until it is emitted where the ground surface intersects the elevation of the water, such as a side slope of a draw. Review of data from Montana Bureau of Mines and Geology Groundwater Information Center indicated no wells present in the permit area. The nearest wells are more than 2,000' from proposed mining on Amendment #11 and are south of Highway 212 on the Arpan Ranch. At this location, there are two wells in relative close proximity to one another, one on each side of Thompson Creek. Each well is approximately 900' in depth, and one well is for domestic use and the other for livestock use.

The area within the amendment is not a recharge for any aquifer. The sides of the ridge would take in a very limited quantity of water that later appears at the top of an impermeable layer as a wet spot or seep.

3.6.2 Surface Water

The surface water hydrology for the amendment area is characterized by unnamed ephemeral channels. The channels usually have a very low gradient and are usually very shallow, perhaps containing no distinct bank, and only a few feet wide. The depth and width are determined by such factors as the bankfull discharge recurrence interval, flow velocity, soil type and vegetation. The channels and surrounding overflow areas are usually better vegetated than the surrounding uplands because of the run-on quantities of water. These channels usually only carry water as a result of snow melt, spring rains or heavy summer precipitation events. The gradient also plays an important part in the erodibility of the channel. If the gradient is overly steep for the type of vegetative root mass present, erosion and headcutting may occur. No perennial or intermittent drainages are located on the proposed amendment area.

The runoff from the area is comparatively high due to low infiltration potential of the clay soils. Pits are typically dug to provide water for livestock. These do not require large drainage areas, because of the overland flow that occurs from precipitation events.

Amendment #11 is in the Thompson Creek watershed. At its closest point, mining activity on Amendment #11 will be approximately ½ mile from Thompson Creek which lies south of Highway 212.

Only ephemeral drainages will be affected by actual mining activity and they will be re-established after mining.

ACC holds a stormwater discharge permit from the State of Montana that requires best management practices (BMP's) to control the amount of sediment leaving the site. According to ACC's mine plan, disturbed areas will be protected from run-on with berms and v-ditches. Controlling run-on will reduce water run-off from disturbed areas. Sediment-control fences, water bars, pits, or rows of straw bales will be employed where run-off threatens to carry excessive sediment to undisturbed lands.

Thompson Creek was placed on Montana's 303d list as an impaired stream due to suspended sediment. However, after the Montana DEQ Water Quality Monitoring Staff reviewed the new data in 2004 and applied it to the States Sufficient Credible Data/Beneficial Use (SCD/BUD) process, it was determined that Thompson Creek is not impaired and will be removed from subsequent 303d lists.

Water quality of Thompson Creek has been monitored by the Carter County Conservation District since 1995. In 2001, a group of stakeholders including the conservation district, the bentonite mining industry, and state and federal environmental agencies began a cooperative effort to intensify efforts to monitor the watershed and water quality. However, these efforts have been hampered by extreme drought, making flow even less frequent. The existing water quality data does not indicate any solid conclusions about the nature of the impairment.

Occasionally, culverts have been placed in an intermittent stream that is crossed by a primary haul road. An example of this is the Thompson Creek crossing in Section 19, T. 9 S., R. 59 E., which has been used for approximately 20 years. This area is approximately four miles southwest of Amendment #11. ACC has no plans to

place additional culverts at intermittent streams.

3.7 Wetlands

There are no stockponds, water impoundments, or wetland resources on Amendment #11.

3.8 Wildlife

Historical Surveys

A four-season baseline wildlife study was conducted in the Alzada area by Ecological Consulting Service (ECS) in 1974/1975. The purpose of the study was to establish year-round biological baseline data concerning wildlife and wildlife habitat on future bentonite mine sites and in the general area. A 95-square mile study area was identified, which covered lands west of Alzada and north of the Montana-Wyoming state line to Willow Creek and included lands adjacent to Amendment #11. Results of this study are contained in the original Contract #00297 application.

ECS reported that pronghorn antelope were the most common big game animals in the area, as 541 pronghorn were observed in 72 observations. The optimum pronghorn habitat was described as "rolling, open grassland with large areas of sagebrush" (ECS report dated 12/1975, page 24). Mule deer were also observed in significant numbers, i.e. 241 mule deer in 71 observations. Eighty nine percent of mule deer observations were in three habitat types: creek bottom, pine/oak/juniper, and big sagebrush/grassland (ECS report, page 27). A total of 180 white-tailed deer were observed in 75 observations in creek bottom habitat (ECS report, page 30). Sage grouse were the most abundant upland game bird on the ECS study area, and a total of four mating grounds (leks) were identified (ECS report, page 33). Sharp-tailed grouse were not as common as sage grouse; 90% of all observations were along Ridge Road and Highway 212. One sharp-tailed grouse lek was identified on the study area (ECS report, pages 39-40). Non-game birds common to the shrub/grassland habitat included western meadowlark, vesper sparrow, horned lark, and Brewer's sparrow (ECS report, page 49).

Waterfowl were observed along the creeks and on stockponds. Most waterfowl observations were of mallards, blue-winged teal, pintails, and American widgeons (ECS report, page 43). Of large predators, observations were made of red fox and one sighting of a bobcat; there were no sightings of coyote (ECS report, page 45). Small mammals commonly observed included white-tailed jackrabbits and mountain cottontails (ECS report, page 45). The following raptor species were observed: golden eagle, rough-legged hawk, red-tailed hawk, marsh hawk (northern harrier), and American kestrel (ECS report, page 45). There was no mention of ferruginous hawks.

In addition, four-season ecology and wildlife studies were conducted by the U. S. Forest Service, Rocky Mountain Forest and Range Experiment Station, in 1979/1980 on future bentonite mine sites in the Alzada area. A 44-square mile study area was identified which covered lands north and west of Alzada between Thompson Creek and the Montana-Wyoming state line and included approximately half of the lands which had been covered by ECS' study in 1974/1975. The study came within ½ mile of Amendment #11 lands. Results of the USFS study are contained in the original Contract #00455 application.

The USFS reported that 422 pronghorn were observed in 26 observations, 390 mule deer in 26 observations, and 22 white-tailed deer in 4 observations. The majority of pronghorn were seen in sagebrush habitat, and riparian habitat along streams was the preferred habitat for mule deer and white-tailed deer (USFS report, page ii). Small game and predators were represented primarily by white-tailed jackrabbits and red fox (USFS report, page ii). The most numerous game birds were sage grouse; however, only one major lek was found. Two other possible booming grounds were found; however, male grouse were sporadic in using these areas (USFS report, page 36). Very few sharp-tailed grouse were present on the study area and only occasional

sightings were made of one or two grouse; no lek activity was seen (USFS report, page 40). Non-game birds, which were commonly seen in the sagebrush habitat were the vesper sparrow, western meadowlark, horned lark, and Brewer's sparrow (USFS report, page 30). Waterfowl that were observed in riparian habitats, included Canada goose, mallard, pintail, American widgeon, shoveler, blue-winged teal, and green-winged teal (USFS report, page 26). The following raptor species were observed: marsh hawk (northern harrier), rough-legged hawk, red-tailed hawk, golden eagle, bald eagle, prairie falcon, and American kestrel (USFS report, page 26). The bald eagle and prairie falcon were believed to be migrating through the area.

Because of the relatively small size of open mine areas and mobility of big game species, mining does not appear to have reduced pronghorn or mule deer populations in the Alzada area. Numbers have remained constant or perhaps increased over the past 20 years. (Incomplete data is available for white-tailed deer populations which are not in the areas where ACC is active and were not studied).

Grasslands provide valuable wildlife habitat because big game species will concentrate on grassland plants during the spring and summer months as noted in the following references:

Mule deer prefer shrubs in winter and grasses and forbs in summer. Pronghorn eat mostly new grasses in the spring, and in the summer broadleaf plants. During the winter, sagebrush and other shrubs serve as their primary foods (from "Consideration for Wildlife in Industrial Development", Wyoming Game & Fish Dept.).

Pronghorns use the greatest diversity of vegetation types in summer and the least in winter (Steve Amstrup, U. S. Fish and Wildlife Service, Sheridan, WY – no date). Pronghorns generally feed mainly on grasses in the spring, Cole and Wilkins, (1958), Severson and May, (1967) and Beale and Smith, (1970). In winter there is 90% use of the big sagebrush type; in spring there is 65% use of perennial grasslands by pronghorn (Amstrup).

In “Diet and Nutrition of the Pronghorn Antelope” by Norman Messenger (1978), he reported on pronghorn in northwestern South Dakota. He found that shrub use was low in the spring and summer months: January: 96% shrubs, February 96% shrubs, March 95% shrubs, April 36% shrubs, May 36% shrubs, June 15% shrubs, July 6% shrubs, August 19% shrubs, September 45% shrubs, October 69% shrubs, November 95% shrubs, and December 97% shrubs.

In “Forage Diversity and Dietary Selection by Wintering Mule Deer”, Carpenter, Wallmo, and Gill, (1978), researchers found that when available, forbs and grasses are an important component of a winter diet for mule deer.

In “Sagebrush Mowing Helps Wildlife, Livestock”, Gocke, (July, 1997), the author describes a joint Wyoming G&F/BLM/Mobile Oil partnership where old sagebrush was mowed to increase diversity of young plants, grasses, and forbs. This project demonstrated that increased diversity in habitat means an increased diversity in wildlife and benefits to livestock as well.

Pronghorn

Wildlife surveys have been conducted by ACC biologists from 1993 to 2006 on new amendment areas. ACC drillers and surveyors also logged wildlife observations on occasion.

The pronghorn continues to be the most frequently observed big game animal in the sagebrush/grassland habitat in the Alzada area. Most sightings of pronghorn are made on the sagebrush/grassland flats in the area, especially south of Highway 212. Pronghorn are generally seen in small groups. No large concentrations have been observed on Amendment #11 lands. During 31 surveys which were conducted on and near Amendment #11 lands in 2003-2005, pronghorn were seen on eleven occasions, in numbers ranging from 4 to 21 individuals.

Pronghorn are occasionally observed very near active mining and will readily graze newly seeded reclaimed lands in the spring and summer.

Over the same general study area that the ECS and USFS baseline studies were done, ACC recorded 395 pronghorn in 36 observations in 1996, 245 pronghorn in 15 observations in 1997, 577 pronghorn in 32 observations in 1998, and 206 pronghorn in 20 observations in 1999. ACC recorded 613 pronghorn in 40 observations in 2002/2003.

Mule and Whitetail Deer

Mule deer are seen on occasion in the upland cuts but more frequently along Thompson Creek. During 31 surveys conducted on Amendment #11 lands in 2003-2005, mule deer were seen on two occasions on the ridge slope. Sightings were of one to eight individuals.

White-tailed deer prefer heavily wooded creek and river bottoms, a habitat not found on the Amendment #11 lands.

Over the same general study area that the ECS and USFS baseline studies were done, ACC recorded 86 mule deer in 13 observations in 1996, 277 mule deer in 20 observations in 1997, 270 mule deer in 28 observations in 1998, and 176 mule deer in 15 observations in 1999. ACC recorded 395 mule deer in 40 observations in 2002/2003.

ACC did not conduct any surveys for white-tailed deer.

Small Mammals

Of other mammals, the most frequently observed species reported in the baseline surveys and in current surveys are badger, red fox, coyote, desert cottontail, and white-tailed jackrabbit. No prairie dog towns occur on the proposed mine sites or in the vicinity. A prairie dog colony can be potential habitat for the endangered black-footed ferret or the burrowing owl, a BLM “sensitive species”, and US Fish and Wildlife “species of conservation concern”.

Small mammals, which may be present, include the deer mouse, thirteen-lined ground squirrel, pocket mouse, pocket gopher, least chipmunk, shrews and voles. ACC does no small mammal trapping; however, the USFS study conducted in 1979/1980 used live-traps and pit traps to determine the species composition in sagebrush and grassland habitats. The deer mouse was found to be the most abundant small mammal, followed by thirteen-lined ground squirrel, sagebrush vole, pocket mouse, prairie vole and shrew species (USFS report, page 82).

Game Birds

Game birds in the area include wild turkey, mourning dove, sharp-tailed grouse, and sage grouse. Mourning doves are the most frequently observed game bird in the shrub/grassland and are the only game bird recorded on the Amendment lands during baseline studies.

Sage grouse depend upon sagebrush for mating, nesting, and wintering activities and grassy areas for summer broods; therefore, some habitat does exist for them on Amendment #11 although Kyle Lindberg from S&L Sheep noted that he has not seen any grouse on the Amendment #11 lands or in the area.

ACC personnel have observed wild turkey in woodland along Thompson Creek and south of the Ridge Road.

Sharp-tailed grouse habitat occurs along Thompson Creek and in road ditches along Ridge Road where infrequent sightings have been made.

Early-morning mating ground (lek) grouse surveys are conducted each spring on ACC projects and in the area. During early morning surveys in April of 2003, 2004, and 2005, no grouse activity was seen on or near Amendment #11 lands.

The main sage grouse leks that have been

located in the Alzada area are in Section 25, T9S, R57E, approximately three miles from ACC's current mining activities and approximately 10 miles southwest of Amendment #11; and in Section 20, T9S, R58, approximately three miles from ACC's current mining activities and approximately 8 ½ miles southwest of Amendment #11.

The Section 25 lek has been observed to be active for over 30 years, and the Section 20 lek was discovered by ACC personnel in 2005. Two small satellite leks may also exist within two miles of the main lek, south of the Ridge Road, but only a few male sage grouse have been observed on occasion on these grounds in recent years.

The main sharp-tailed grouse leks that ACC has located in the Alzada area are in Section 23, T9S, R59E, immediately off the Ridge Road and approximately one mile west of Highway 212; and in Section 19, T9S, R58E immediately off the Ridge Road and approximately 11 ½ miles west of Highway 212. The Section 23 lek is located about two miles south of Amendment #11, and the Section 19 lek is located about 9 miles southwest of Amendment #11.

Sharp-tailed grouse habitat in the brushy road ditches of Ridge Road and along Thompson Creek and wild turkey habitat in the open woodlands south of the Ridge Road are outside of the areas where ACC is active. Mourning doves are frequently observed near mining activities, but are not dependent on sagebrush as are sage grouse for nesting and wintering activities and food. Disturbance of the sagebrush/grassland habitat on mine sites may cause temporary displacement of sage grouse, although they will use the grasslands for brood rearing, especially where the vegetation is moist. Infrequent sage grouse sightings indicate a low density of sage grouse presently in the Alzada area; however, in February, 1999 a local rancher reported increased sightings of sage grouse and also sightings of Hungarian partridge, which had not been seen in the area for several years.

The pre-mine sagebrush/grassland habitat has a low density and diversity of non-game bird species, as reported in surveys from 1974 to the

present. The most abundant birds observed by ACC personnel are sparrows, western meadowlarks, horned larks and lark buntings.

Waterfowl are observed on stockponds and reservoirs in the area. They include Canada goose, mallard, pintail, teal, American coot and an occasional great blue heron.

Raptors

Raptors, which may be found in the open sagebrush/grassland country where most of the mining occurs, include single cover raptors such as northern harrier, ferruginous hawk, and short-eared owl, and multi-cover raptors, which may nest elsewhere and hunt in open country, such as the golden eagle and red-tailed hawk.

Of special interest is the ferruginous hawk, which is the largest of the North American buteos and is suffering population declines in some parts of the country. It was previously listed as a Category 2 species by the US Fish and Wildlife Service, which means there is evidence of vulnerability. It is currently listed by the USFWS as a "species of conservation concern". Protection of ferruginous hawk habitat is required by provisions of the federal Migratory Bird Treaty, which prohibits harming, harassing, or taking of birds.

A ferruginous hawk pair will occupy a territory of three square miles or more and may have up to five nests within their territory. Each spring they chose one for incubation and brooding, and it is often a different nest each year.

Ferruginous hawk nesting activity in a 64-square mile west of Alzada and north of the Montana-Wyoming state line and including areas adjacent to Amendment #11 lands was thoroughly investigated in a study conducted by FaunaWest (Craig Knowles) for ACC in 1997. The purpose of the study was to locate all ferruginous hawk nests, active and inactive, and monitor active nests for nest success in 1997 and compare data to

baseline studies conducted by K. W. Wittenhagen, BLM, in 1991 and 1992 on the same study area.

Knowles reported a total of 21 nests within the 64-square mile area and based on the distribution of the nests concluded that there is adequate space for seven nesting territories. Most of the nests appeared to be several years old and in a "fair" or "poor" condition. Many of the nest sites had badger excavations under them. Three nests showed activity in 1997: a nesting attempt was made and failed at one nest; one active nest appeared to be abandoned shortly after hatching and may have been predated upon by a golden eagle observed near the nest; and the third nest fledged two young (this nest was the closest to ACC's activities and was located within one-half mile of the main haul road). For comparison, BLM documented four successful nests in the study area in 1991 and two successful nests in 1992.

In 1998, 1999, and from 2002 to 2006, ACC personnel checked some of the ferruginous hawk nests identified by FaunaWest and found no activity on nests within or near Amendment #11 boundaries. The nearest active nest area is approximately two miles northwest and over the ridge from

Amendment #11 where the hawks have alternated between two nest sites in the past three years.

Two old, inactive Ferruginous hawk nests were discovered by ACC on the high ridge, near the Amendment #11 boundary; however, the nests have no structural integrity and consist of some scattered sagebrush sticks, indicating several years since they have been active. Craig Knowles did not record any nesting activity in this area in his 1997 study.

A general decline in nesting, which was observed in other portions of Montana in 1997, may be due to a cyclic decline in prey - white-tailed jackrabbits, ground squirrels, and northern pocket gophers, FaunaWest, (1997). Black-tailed prairie dogs, which are a preferred food source for ferruginous hawks are not as prevalent in the Alzada area as they were a few

years ago. Large prairie dog colonies in the area (for instance, north of Highway 212 on the McDowell Ranch) have been killed off in recent years;

however, a small dog town has recently re-emerged in this same area.

Reducing the pre-mine slopes, which are gentle to moderately steep on Amendment #11 to gentler slopes on the reclaimed land could affect ferruginous hawk nesting although no nests have been located on Amendment #11 lands. The hawks often use ridge slopes and small pinnacles as nesting sites, and many of these features remain undisturbed in amongst the mine sequences. Knowles (1997) stated that there was no clear indication that mining activities were influencing ferruginous hawk nesting and that it was apparent that nest sites are not a limiting factor in this study area. Predators that may prey on ferruginous hawks include badger, red fox, coyote and golden eagle. Badgers were responsible for predation at ferruginous hawk nests in the Lone Tree and Alzada study areas in 1991, Wittenhagen. (1991).

Preferred food sources for ferruginous hawks are prairie dogs, white-tailed jackrabbits and ground squirrels, FaunaWest, (1997); although Wittenhagen reported the northern pocket gopher to be the most common prey species at active nests in 1991 and 1992. Other prey items are thirteen-lined ground squirrels, western meadowlark, sage grouse, and small birds, Wittenhagen, (1991). Wittenhagen reported that white-tailed jackrabbit numbers were lower in 1992 than in 1991 and both years were lower than in 1981 and 1982 in the Lone Tree study area, which is eight miles north of Alzada. Wittenhagen speculated that ferruginous hawks will switch to alternate prey when their principal prey species declines. His data indicated low use of jackrabbits and subsequent high use of pocket gophers. He further speculated that several mild open winters may make jackrabbits more susceptible to predators, Wittenhagen, (1992). Knowles, (1997)

noted that a decline in ferruginous hawk nesting was also observed in other portions of Montana in 1997 and may be due to a cyclic decline in prey. He also stated that a few years ago there was a large prairie dog colony a few miles north of the study area, north of Highway 212, and that colony was no longer active in 1997. It is important to note that no ferruginous hawk nests are in the proposed disturbance area, thus minimizing impacts to nesting birds.

Aquatic life

There is no water on Amendment #11. However, downstream of the project area in Thompson Creek (RM 0.0 – 36.3), there are nine fish species known to occur (data was provided by extrapolated surveys from Montana Fish Wildlife and Parks, DEQ and Montana State University (MSU). These include the fathead minnow (*Pimephales promelas*), lake chub (*Couesius plumbeus*), longnose dace (*Rhinichthys cataractae*), sand shiner (*Notropis stramineus*), black bullhead catfish (*Ictalurus melas*), white sucker (*Castostomus commersoni*), green sunfish (*Lepomis cyanellus*), common carp (*Cyprinus carpio*), and plains minnow (*Hybognathus placitus*). None of these nine species are sensitive or a MT species of special concern. Three of these species, the fathead minnow, black bullhead catfish, and white sucker, were found at two survey locations by Montana Fish, Wildlife and Parks in May 2004. A fish Index of Biological Integrity (IBI), developed by Bramblett et. al. (2003), was conducted on the above two survey sites (An IBI approach involves identifying characteristics of fish populations that are most responsive to anthropogenic influences and least responsive to changes in natural factors). The results indicated “poor” scores of 36 percent and 43 percent.

An additional 5 sites were surveyed by DEQ and Montana State University in 2004. The surveys indicated fish presence upstream to river mile 36.3. Fish species found included: fathead minnow, black bullhead, green sunfish, plains minnow, and the common carp. The IBIs for these sites are not available at this time, however, due to the number and type of species

captured, the IBIs are not expected to change from the above “poor” scores.

Other aquatic life species that occur or may occur would be aquatic invertebrates and amphibians associated with ephemeral streams and the stock ponds located within the general area. There are no known BLM sensitive or a MT species of special concern aquatic invertebrates located within the project area. There may be the tiger salamander (*Ambystoma tigrinum*), great plains toad (*Bufo cognatus*), Woodhouse’s toad (*Bufo wood housii*), western chorus frog (*Pseudacris triseriata*), plains spadefoot (*Scaphiopus bombifrons*), and northern leopard frog (*Rana pipiens*) within the project area. Of these species, the great plains toad and plains spadefoot are BLM sensitive species and/or MT species of special concern.

Threatened and Endangered Species

There are no known endangered species in the Alzada area. The bald eagle, which was downlisted to a threatened species in 1995 is frequently observed as a winter resident along waterways in southeastern Montana. Sightings by ACC personnel have increased in the past 15 years as the bald eagle has made a strong comeback.

3.9 Cultural

The proposed Amendment #11 undertaking has been surveyed for cultural resources. In 2002, BLM archeologist, Doug Melton, surveyed 142 acres of the project, and in 2005, ACC contractor, Llano Consultants, completed a Class III Inventory on the remainder of the lands covered by Amendment #11 (see report numbers: MT-020-02-256, MT-020-05-308 and MT-020-05-326). The cultural resource inventories were conducted over the entire 567.5 acres contained within Amendment #11 although only about 160 acres are proposed to be affected by mining.

Two cultural resource sites are located within the boundaries of the Amendment #11 project area. Site 24CT1367, consists of the remnants of old Highway 23 (that dating to the 1930’s) and crosses through the project area. However, the road is not considered to be eligible for the National Register of Historic Places and will only be minimally affected by mining activities.

Site 24CT1368 consists of a small scatter of historic debris eroding off a hillside on the very eastern edge of the project area. This site is also not considered eligible for the National Register of Historic Places. Being on the edge of the project area, the site will not be affected by the proposed mining activities.

Should significant sites be found within the Amendment #11 project area during mining activities, information concerning the located cultural site should be brought to the attention of the proper local, state, and federal officials through normal reporting procedures. A variety of mitigation measures would then be utilized, ranging from data collection (excavation) to on-site protection to deal with the sites. In 1975, the University of Montana conducted archaeological reconnaissance over some of ACC’s future mine sites, and it was observed that “generally the area is not well suited to aboriginal occupation”, University of Montana study, (1975).

Soils throughout many of the mine sites are “compact clay hard pan, siderite concretions, pavements and exposed bentonite. The potential for unseen significant buried cultural remains in this soil structure is very low”, Llano Consultants, (1996).

3.10 Soils

A thorough investigation of the soil resources on Amendment #11 lands was done by Jim Nyenhuis, Certified Professional Soil Scientist/Soil Classifier, under contract with ACC in 2005. Soils mapping and classification was conducted in accordance with the standards and procedures of the National Cooperative Soil

Survey and DEQ.

Initial mapping units were identified using USGS 7.5' Gomer Draw and Alzada topographic quadrangles and air photo NRCS Order 3 soil survey maps. These tentative boundaries were used during field reconnaissance and soils delineation. The recently published NRCS Carter County Soil Survey also served as a reference when generating 1"=400' Soils Maps for Amendment #11.

As recommended in DEQ's Soils and Overburden Guidelines, soils were mapped to the detailed Order 1-2 level of intensity, and areas not to be affected were mapped, at a minimum, to the less detailed Order 3 level. Entire mapping units were traversed on foot with soil profiles periodically exposed using a sharpshooter and bucket auger. Nine topsoil and subsoil samples were taken, and chemical analyses were performed by Inter-Mountain Laboratories, Inc., Sheridan, WY. The recommended topsoil and subsoil salvage depths are based on the results of these analyses.

Soils on Amendment #11 in the areas of proposed mining are characterized primarily by two dominant soils: a shallow Neldore soil which was mapped on ridge side slopes and in complex with Rock Outcrop (shale and bentonite) and the deeper Marvan soil which is a well-drained soil that was mapped in a large and very wide alluvial fan coming off the upland ridge.

Neldore is a shallow Aridic Ustorthent. It is a well-drained slightly alkaline soil forming in clay shale on uplands. Neldore clay has slow permeability and low available water capacity.

Clay content of the Neldore type ranges from about 40 to 65% on the study area and averages 52%. Recommended salvage depths are 8" for topsoil and 8" for subsoil. There are also numerous outcrops including rock, bentonite and shale which will not be salvaged as topsoil.

Marvan is a deep Sodid Haplustert.

Permeability is slow to very slow and available water capacity is high. Surface run-off is medium, and the erosion hazard is high from water and moderate from wind.

Below depths of about 26" to 32", Marvan is moderately to strongly affected by salinity and/or sodicity. The best Marvan soil is the upper 12", and this material is recommended for topsoil salvage, with the underlying 14" recommended for subsoil salvage.

3.11 Vegetation

The first known four-season baseline vegetation study conducted in the Alzada area was by Ecological Consulting Service (ECS) in 1975. The purpose of the study was to establish year-round biological baseline data concerning vegetation on future bentonite mine sites. A 95-square mile study area was identified which covered lands west of Alzada and north of the Montana-Wyoming state line to Willow Creek. Results of this study are contained in the original Permit #00297 application.

In addition, ACC personnel conduct vegetation mapping and herbaceous cover sampling, and compile vegetation species lists and determine shrub densities on lands that are added to the permits.

During the 2004 and 2005 field seasons, the Amendment #11 lands were reviewed by ACC personnel in order to incorporate ECS's data into ACC's vegetation classification system. Then, the various vegetation community types on Amendment #11 were surveyed with a GPS survey system. In the office, these boundaries were digitized by computer onto 1"= 400' vegetation maps. Herbaceous cover sampling was done in July, 2005, and species lists were compiled based on observations in 2004 and 2005.

ACC's field data revealed that the major vegetation communities on Amendment #11 are: a Wheatgrass/Japanese Brome/Big Sagebrush community (44% of total acreage), a Black Greasewood community (21% of total acreage), a Mixed Grass Prairie community (18% of total

acreage), a Crested Wheatgrass community (15% of total acreage), a Mixed Grass Prairie/Black Greasewood community (1.5% of total acreage), and inclusions of barren ground, annual weeds, and ranch road disturbance.

Approximately 160 acres will be affected by proposed mining activities on Amendment #11 and will occur primarily in the Wheatgrass/Japanese Brome/Big Sagebrush (W/JB/BS) community where 77 acres are proposed to be affected. Another 39 acres will be affected in the Black Greasewood (BG) community and 43 acres in the Mixed Grass Prairie (MGP) community. Minor affectation will occur in the Crested Wheatgrass (CR) community and the Mixed Grass Prairie/Black Greasewood (MGP/BG) community.

Inclusions of bare ground and outcrops are common throughout Amendment #11 and are considered to be inclusions within the main vegetation types.

Sampling in the W/JB/BS community in 2005 showed that herbaceous cover ranges from approximately 15% to 30%, with an average of 22%. Bare ground averages 53%. Western wheatgrass and Thickspike wheatgrass provide the most relative cover

(43%) in this community, with Japanese brome at 20%. The cover of Big sagebrush and Plains prickly pear is approximately the same at 10% and 11%, respectively. Big sagebrush was observed at 10 of the 40 one-meter sample points, resulting in a density of .25 plant square meter overall. Big sagebrush plants in the height class of 5-10" are the most frequently encountered.

Sampling in the BG community in 2005 showed that herbaceous cover ranges from approximately 10.6% to 33.6%, with an average of 20%. Bare ground averages 57%. Black greasewood and Wheatgrass species provide the most relative cover at approximately 29% apiece in this community. Japanese brome provides relative cover of 20%.

Sampling in the MGP community in 2005 showed that herbaceous cover ranges from approximately 14 to 38%, with an average of 22.6%. Bare ground averages 60.4%.

Western wheatgrass, Thickspike wheatgrass, and Japanese brome combine to provide approximately 2/3 of the relative cover in this community.

The following table summarizes the vegetation community types in the Amendment #11 area.

Table 3.11-1 Major Vegetation Community Types

<u>Name of Community</u>	<u>Average # of Herbaceous Cover</u>	<u>Average % of Bare Ground</u>	<u>Number of Common* Species</u>
Wheatgrass/Japanese brome/ Big Sagebrush	22.0%	53.3%	7
Black Greasewood	19.9%	56.7%	6
Mixed Grass Prairie	22.6%	60.4%	6
Mixed Grass Prairie/ Black Greasewood	19.3%	54.3%	8
Crested Wheatgrass	41.0%	44.0%	1

* *common species* were considered to be those occurring along at least 25% of the transects in the first three listed communities.

Other smaller communities include outcrops, barrens, and disturbance along the ranch road.

No noxious weed species were observed on Amendment #11.

ACC has an approved noxious weed plan which is used to control weeds during mining and reclamation activities.

No unusual, threatened, or endangered plant species have been identified during ACC's vegetation studies. Bentonite Corporation has reported a BLM "watch" species (Blue toadflax) south of the Ridge Road and east of their Vol Ash 6 claims. ACC has not encountered this species during baseline and bond release studies.

3.12 Grazing Resources

In the original Permit #00297 application, it was noted that the pre-mine range condition was generally "fair" over the 1,550 acres in the permit and the recommended livestock stocking rate was 0.3 AUM per acre, or 100 animal units for 4.7 months over the 1,550 acres (Montana Department of State Lands – from Environmental Impact Statement dated 11/12/76).

The current stocking rate for the 160 acres that would be disturbed in Amendment #11 would be 39 animals per month for 3 months. Community's rates vary from 0.14 to 0.35 AUM/acre.

The proposed action will have an effect on the allotments allowed to one grazing permittee (S&L Sheep Ranch).

- S&L Sheep Ranch
 - Grazing Number 2503696
 - Willow Creek Allotment (Number 10419)

S & L Sheep Ranch

S&L Sheep Ranch utilizes both cattle and sheep in the grazing operation. The grazing operation will be affected by the mining proposal on Amendment #11. The location of the proposed action is contained within three pastures – the Mailbox Pasture which is north of Highway 212 in Section 5, T9S, R59E, a crested wheatgrass CRP pasture which is mainly in Section 4, T9S, R59E, and the Sandhill Pasture in Sections 3, 4, 10 and 11, T9S, R59E.

The location of the proposed action on BLM land which is grazed by S&L Ranch contains approximately 299.8 acres of BLM lands that are allocated 59.2 AUMs.

The S&L Sheep Ranch typically utilizes the Mailbox, CRP and Sandhill Pastures in a rotation to graze 180 to 200 cow/calf pairs and sheep during the summer months approximately 1.5 month. Livestock water for this allotment is obtained through the utilization of pits and reservoirs. The watering locations would include the Laura McDowell Pit, which S&L rebuilt through normal maintenance the summer of 2002, and the Rip Rap 2 Pit. The Rip Rap 2 Pit also contains a shallow reservoir (McDowell Reservoir #1) above the pit that serves both wildlife and livestock.

3.13 Lands and Realty

3.13.1 Ownership and Land Use Authorizations

In Amendment #11, there are 299.8 acres of land with Federal surface and there are 267.7 acres of

land with private surface.

See Appendix 1 for the legal descriptions and the acres.

The following six rights-of-way have been issued by the BLM across federal surface in the area of the proposed Amendment #11: 1) MTBIL-040452 issued to the Montana Highway Commission for State Highway 212 in the SW¹/₄SW¹/₄NE¹/₄, E¹/₂SE¹/₄NW¹/₄, N¹/₂NW¹/₄SE¹/₄, Section 5 and NW¹/₄SE¹/₄SW¹/₄ Section 10; 2) MTM-9829 issued to Black Hills Power and Light for an overhead power line in the SE¹/₄SE¹/₄NE¹/₄ of Section 5; 3) MTM-57064 issued to Southeast Electric Coop. for an overhead power line in the NE¹/₄SE¹/₄, NE¹/₄SE¹/₄SE¹/₄, NE¹/₄SE¹/₄SE¹/₄SE¹/₄ of Section 10; 4) MTM-59032 issued to Range Telephone for a buried telephone line in the SW¹/₄SW¹/₄NE¹/₄, E¹/₂SE¹/₄NW¹/₄, N¹/₂NW¹/₄SE¹/₄, Section 5 and the SW¹/₄SW¹/₄NE¹/₄, SE¹/₄SE¹/₄NW¹/₄, NE¹/₄SW¹/₄, NW¹/₄SE¹/₄SW¹/₄ of Section 10; 5) MTM-61105 issued to Carter County for an RS 2477 County Road in the SE¹/₄NW¹/₄, NE¹/₄SW¹/₄, NW¹/₄SE¹/₄SW¹/₄ of Section 10; 6) MTM-89239 issued to John Daun for an access road in the SW¹/₄NW¹/₄SW¹/₄, Section 11.

3.14 Recreation

Recreation consists primarily of big game and bird hunting, although hunting is restricted on the private lands in the area.

3.15 Visual Resources

The BLM has developed the Visual Resource Management System (VRM) to classify visual resources based on scenic quality, visual sensitivity, and visual distance zones. All lands within the project area are classified as VRM Class III. The objective of this class is to partially retain the existing character of the landscape and any changes should be moderate. Management activities may attract attention, but should not dominate the view of the

casual observer. Existing mine activities have modified the landscape by creating changes in form, line, color and texture of the landforms. New temporary landforms are created including overburden stockpiles, mine pits, soil stockpiles and roads.

The landscape is dominated by short grass prairie, scattered sagebrush, cactus, black greasewood, bentonite outcrops, and barren shale ridge slopes and is similar to land throughout southeastern Montana. There are no trees or open water on Amendment #11.

3.16 Noise

Existing noise in the general area of Amendment #11 results from daily traffic on Highway 212 which is located immediately south of Amendment #11.

Noise, as perceived by humans, is affected by intensity, pitch, and duration. Loudness is measured in decibels (dB), whereas the A-weighted sound scale (dBA) represents environmental noise. Mining activities are typically subject to noise regulations imposed by the Mine Safety and Health Administration (MSHA). Noise generated by trucks, dozers and other mine equipment typically ranges from 90 to 100 dBA at the source. For comparison, a gas lawnmower at 3 feet would register about 95 dBA, and a jet flying over at 1,000 feet would register about 105 dBA.

3.17 Transportation

Access to the Amendment #11 mine sites will be from a Highway 212 approach near the southeast side of the project.

The bentonite is hauled by contract haul trucks. Hauling shuts down during inclement weather and during some months, but when active, there may be 75 or more loads per day hauled from ACC's Montana mine sites.

3.18 Social and Economic Conditions

The bentonite companies have been a major

industry in the Alzada, Montana/Colony, Wyoming/Belle Fourche, South Dakota area for many years. The first company to begin mining in Montana was the Baroid Division of NL Industries (Bentonite Corporation) in 1968. ACC's operations near Alzada began in the late 1970's.

In 1999, the population of Alzada was estimated to be about 50 residents. (Alzada is not incorporated so census population information is not available specifically for this community). Carter County, where Alzada is located, had a 2000 population of 1,360. This indicates a very sparse population density of less than 0.5 persons per square mile, compared to a figure of over 6 persons per square mile for the state. The county lost 9.5 percent of its population between 1990 and 2000. Nearly 18 percent of the county population is 65 years or over, compared to 13 percent for the state. This area will probably continue to slowly lose population as people leave the area for more employment and education opportunities.

Colony, which is located in Wyoming about 12 miles southeast of Alzada, is also an unincorporated community. It is located in northeast Crook County, which had a 2000 population of 5,887. The county population increased 8 percent between 1990 and 2000. Belle Fourche, which is located in South Dakota 37 miles southeast of Alzada, had a 2000 population of 4,565 and is the county seat of Butte County. Butte County had a 2000 population of 9,094, which was an increase of 10 percent from 1990.

The Alzada economy is dependent almost entirely upon ranching and bentonite mine-related activities. ACC has 40 employees at its Montana Field operation, (Lyndon Bucher, personal conversation, 5-26-04). Another 160 employees at the Colony East and West plant and mill are dependent on the Montana production. The ore is hauled to the Colony plants by contract truckers. Most of the Montana Field operations employees commute from Crook County, Wyoming and Butte County, South Dakota,

according to ACC and U.S. Census Bureau data on county to county commuting patterns in 2000. The number of employees covered by Unemployment Compensation Insurance was 270 in Carter County, 1,954 in Crook County, and 2,403 in Butte County in 2002 according to the U.S. Bureau of Labor Statistics.

ACC stated in its application that the average weekly wage for employees in the three state area was more than \$800 in 2002. The U.S. Bureau of Labor Statistics reported the average weekly wage was \$325 in Carter Co., \$400 in Butte Co., and \$484 in Crook Co. in 2002.

USGS production data for Montana was incomplete due to the small number of mines reporting (Bob Virta, USGS, personal conversation, 5-24-04). USGS reported Montana bentonite production was 278,000 tons in 2001, and 272,000 tons in 2002 (The Mineral Industry of Montana, 2002, USGS). This compares with reported production averaging 395,000 tons from 1994 to 1996 (Robin McCollough, MBMG, personal conversation, 5-26-04).

ACC has surface and mineral leases with some of the area ranchers. Private landowners receive royalties and/or surface damage payments. ACC has active mining claims on the federal lands included in the permit area. The Federal Government receives a \$100 per claim Maintenance Fee, there are no production royalties.

The Montana employees pay Montana income taxes. Wyoming and South Dakota have no income tax but do have sales taxes. All three states levy property taxes on plant and equipment. ACC's application stated that the annual payroll for the 200 employees in the tri-state area was 10.1 million dollars in 2002. In addition, they paid vendors 11.3 million dollars.

Montana levies a yearly ad-valorem tax on the net proceeds of bentonite production, the Miscellaneous Mines Net Proceeds Tax. The taxable value is equal to 100% of the annual net proceeds, which is multiplied by the local mill levy. The County Treasurer collects the tax.

The tax is distributed on the basis of the mills levied by the taxing jurisdiction.

ACC stated that they paid 1.36 million dollars in Net Proceeds tax in 2002. Based on Carter Counties' average annual mill levy of 313.11, ACC's production accounted for approximately 72% of the total taxable value. Further, the Net Proceeds revenues account for 59% of the total taxable value for the County in 2002, (Montana Department of Revenue Biennial Report, December, 2002).

Property taxes account for one half of the county's General Fund budget, on average (Pam Castleberry, Carter County Clerk and Recorder, personal conversation, 5-26-04) and are the principal source of revenue for schools in Montana.

In 2002, Carter County received 1.36 million dollars from ACC in the form of severance taxes and will receive approximately the same amount for 2003. These monies are critical for county operations.

3.19 Environmental Justice

Executive Order 12898, Environmental Justice, requires that Federal agencies "identify and address the . . . disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." BLM has developed an instruction memo containing guidance for evaluating environmental justice issues in land use planning (IM No. 2002-164).

The populations of Carter County, Montana, Crook County, Wyoming, and Butte County, Wyoming and are each at least 95% White. The highest level of non-White persons is in Butte County, South Dakota, where Native Indians (including Alaska Natives) comprise 2.7 percent of the population.

The poverty rate for families is 15.9 percent in Carter County, Montana, compared to a state rate of 10.9. The poverty rate for families is 7.8 percent in Crook County, Wyoming, compared to a state rate of 8.0. The poverty rate in Butte County, South Dakota is 9.4, compared to a state rate of 9.3. Thus the poverty rates in the affected counties in Wyoming and South Dakota are similar to the state rates for that county.

3.20 Mineral Resources and Geology

Bentonite clay is a fine-grained rock composed mainly of montmorillonite minerals. The formation of bentonite is an in situ alteration of volcanic ash. Pyroclastic material was ejected into the atmosphere by volcanic activity and deposited as sediment in a marine environment. The resulting alteration of volcanic ash is the material we call bentonite.

Bentonite has unique chemical and physical properties and is called "the clay of 1000 uses". The principal markets for bentonite include metal casting for the formation of sand molds, iron ore pelletizing, well drilling, clumping cat litter, pharmaceutical and cosmetic industries, pelletizing aids in animal feeds, carriers for agricultural chemicals, etc. Environmental products include liners for landfills, waterproofing panels, ground water products, bentonite-based flocculents to remove emulsified oils and heavy metals from waste water, bentonite-based grout, and many others.

Bentonite deposits of southeastern Montana occur in the Northern Black Hills mining district, which includes parts of Butte County, South Dakota, Crook County,

Wyoming and Carter County, Montana.

The overall geologic structure of the district is that of a broad northwestward-plunging anticline, in which the strata dip gently toward the northeast, north, and northwest. The overall structure is interrupted, however, by several subordinate folds, which bring the bentonite beds to the surface repeatedly, so that large resources of bentonite are present under light overburden. (Knechtel, 1962).

Mining on Amendment #11 will consist of surface mining for bentonite clay located in the F bentonite bed which passes through the property in a broad belt. The F bed is the uppermost stratum of the lower member of the Belle Fourche Shale formation. These strata formed during the Lower and Upper Cretaceous periods (Table 3.19-1).

In order to reach the F bentonite bed, ACC will mine through a portion of the Belle Fourche Shale formation, which consists of dark-gray fissile shale with manganiferous siderite (iron rock) concretions and isolated portions of lenses of sandy shale and sandstone. Bed F is overlain and underlain by shale (Table 3.19-1). Depth of the overburden in the areas of proposed mining ranges from 0 feet (bentonite outcrops) to 50 feet. Thickness of the bentonite seam averages about 3 ½ feet.

Mining on Amendment #11 will affect only the Belle Fourche Shale formation, which is not considered to be geologically unique.

TABLE 3.19-1 STRATIGRAPHIC COLUMN OF THE TERTIARY, MESOZOIC, AND PART OF THE PAELOZOIC SEDIMENTS IN THE MONTANA AND WYOMING PORTIONS OF THE POWDER RIVER BASIN

ERATHEM	SYSTEM, SERIES, AND OTHER DIVISIONS		POWDER RIVER BASIN, MONTANA AND WYOMING		
CENOZOIC	Quaternary		Alluvium		
	Tertiary	Pliocene			
		Miocene			
		Oligocene			
		Eocene	Wasatch Formation	White River Formation	
		Paleocene	Fort Union Formation	Tongue River Member	
	Lebo Shale Member				
Tullock Member					
MESOZOIC	Cretaceous	Upper	Hell Creek Formation		
			Fox Hills Sandstone		
			Lewis Shale	Pierre Shale	
			Mesaverde Formation		
			Cody Shale		
			Frontier Formation	Niobrara Formation	
				Carlile Shale	
				Greenhorn Formation	
				Belle Fourche Shale	
			Mowry Shale		
		Lower	Muddy Sandstone	Newcastle Sandstone	
			Thermopolis Shale	Skull Creek Shale	
			Inyan Kara Group	Fall River Formation	
				Lakota Formation	
			Jurassic	Morrison Formation	
	Sundance Formation	Upper Part			
		Lower Part			
		Gypsum Spring Formation			
	Jurassic (?) or Triassic (?)	Chugwater Group or Formation		Spearfish Formation (Upper part)	
	Triassic	Goose Egg Formation			Upper part
	Permian			Lower Part	(Lower part)
Minnekahta Limestone					
Opeche Formation					
Pennsylvanian		Tensleep Sandstone		Minnelusa Formation	
Mississippian		Amsden Formation			
	Madison Limestone		Madison Group		

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Chapter 4

Environmental Consequences

4.1 Introduction

The anticipated direct and indirect impacts of the Proposed Action and Alternatives are discussed in this chapter. For each resource, potential mitigation measures and residual impacts are also described. Cumulative impacts are described for those resources for which a direct or indirect impact has been identified. As stated in 40 CFR 1508.7 “. . . cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency or person undertakes such action. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. . .”

Potential mitigation measures are identified, where necessary, in response to anticipated impacts of the Proposed Action. Mitigation measures can be required by BLM as a condition of approval (Decision Record) and are implemented by incorporating them into the Plan of Operations. Residual impacts are those impacts remaining after implementation of mitigation measures. Cumulative effects result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable actions.

4.2 Assumptions and Analysis Guidelines

In order to evaluate potential environmental impacts resulting from the Proposed Action and any other long range future actions, the agencies evaluate the potential mining development of the mine areas using existing levels of development, a mine plan developed by ACC for the amendment lands as well as a Reasonably Foreseeable

Development (RFD) scenario for long term future development. ACC developed a detailed mine plan for all land being added through Amendment #11. (Figure 1.1).

The duration of the possible impacts is analyzed and described as short-term or long-term; short-term is up to 5 years and long-term is 5 to 20 years.

The RFD area is regarded by BLM as lands that might contain some potential for future mining and could be permitted within the next 10 to 15 years by ACC. The lands are largely unexplored, there are no mine plans drawn at present, and the RFD represents a best guess scenario as to what lands could be mined in the future. The RFD will be used solely to allow BLM to analyze the cumulative (future) impacts in the area (Figure 1.1).

The impact analysis is based on previous events, experience of personnel and their knowledge of resources in the area.

4.2.1 Assumptions Common to All Alternatives and Resources

4.2.1.1 Past and Present Developments (Existing)

The ACC project area lies within a larger mining region in which two companies operate. The Amendment #11 project area lies within ACC's Alzada North (Permit #00297) mine area. Most of the mine-related disturbance in this area is north of the Ridge Road, within the Willow Creek watershed. Direct and indirect impacts from the proposed action would be confined to the Alzada North mine area. The other mine area within the region which will be considered for cumulative impact analysis, is the Alzada South mine area, located south of the Ridge Road within the Thompson Creek watershed. The Alzada South area also includes activity by Bentonite Performance Minerals.

American Colloid Company

ACC has been mining bentonite in the Alzada, Montana area under State of Montana Mined Land Reclamation Permit #00297 (Alzada North) since 1977. As active areas have been mined out, reclaimed, and removed from the permit over the years, additional acreages have been added through ten amendments to the permit.

Permit #00297 currently contains 5,224 acres. About 2,014 acres have been disturbed by mining within the current permit boundaries - 1,496 acres have been reclaimed through the seeding stage and about 518 acres are currently under some phase of mining. In addition, 1,466 acres have been fully released from bond and removed from the permit, 323 acres of which were disturbed and reclaimed.

About 1,941 acres in the permit are federally owned and administered by BLM and approximately 3,283 acres are privately owned.

ACC's Alzada South area is south of the Ridge road and consists of two different State of Montana mining contracts, which were recently merged into one existing permit for ACC, Permit #00164.

Permit #00164 was issued to International Minerals & Chemical Corporation (IMC) in 1973 and was transferred to ACC in April, 1988 and Permit #00455 was issued to ACC in 1981. All together, ACC's Alzada South area contains about 4,335 permitted acres. About 1,071 acres have been disturbed by mining within the current permit - 604 acres have been reclaimed through the seeding stage, and 467 acres are currently in some stage of mining. In addition, 339 acres have been fully released from bond and removed from the permit, 24 acres of which were disturbed by mining and reclaimed.

In total, ACC currently has about 9,559 acres under state permit in the Alzada, Montana area; 6,474 acres are undisturbed

and 3,085 acres have been affected by mining activities (of which 2,100 acres have been reclaimed through seeding) within the current permit boundaries. A total of 1,805 acres have been fully released from bonding, 347 acres of which were disturbed and reclaimed. Total disturbance inclusive of released areas adds up to approximately 3,629 acres which includes 196 acres for haul roads.

Bentonite Performance Minerals

Bentonite Performance Minerals (BPM) has about 3,550 acres of mixed federal and private lands permitted in this area of which 501 acres are BLM lands.

According to BPM's 2002 Annual Mining Report, mining in this area has disturbed about 671 combined private and federal acres including about 50 acres of BLM lands. About 507 of the combined federal and private acres have been reclaimed including about 26 acres of BLM lands. Montana has released reclamation bond on 73 acres.

There is also an estimated 252 acres of un-reclaimed abandoned mine lands in the Alzada South area, which were mapped by the State of Montana AML program in 1988. Bentonite Performance Minerals re-disturbed about 53 acres of pre-law disturbance and have reclaimed about 46 acres.

BPM intends to continue mining in this vicinity into the foreseeable future.

The combined BPM/ACC permitted acreage in Alzada North and South areas is about 11,520 acres of which about 3,786 acres (including roads) have been disturbed by mining (Table 4.2.1.1-1).

About 1,839 acres have been fully released from bonding liability and have been removed from the permit. About 409 acres had mine related disturbance and 1,430 acres were never disturbed. About 252 acres of AML exist in the Alzada South Area.

The total mine related disturbance in the combined North and South areas including currently permitted lands, fully reclaimed lands, those fully released from bond, and

un-reclaimed AML sites totals about 4,424 acres.

Table 4.2.1.1-1 Current Permitted Acres

	ACC Alzada North	ACC Alzada South	BPM Alzada South	Totals
Acres Presently Permitted	5,224	4,335	3,550	11,520
Acres Undisturbed	3,210	3,264	2,879	7,734
Acres Reseeded	1,496	604	507	2,722
Acres in Active Mining	518	467	164	884
Acres Haul Roads	151	45	*	180

Table 4.2.1.1-2 Released Acres

	ACC Alzada North	ACC Alzada South	BPM Alzada South	Totals
Acres Fully Released From Bond	1,466	339	73	1,816
Acres, Disturbed, Reclaimed and Released	323	24	73	409
Acres, Undisturbed and Released	1,143	315		1,430

Table 4.2.1.1-1 Total Disturbed Acres

	Acres Mine Related Disturbance Within Permits	Acres of Mine Related Disturbance Released From Bond	Acres of AML Sites	Total Mine Related Disturbance
Acres of Mine Related Disturbance	3,786	409	252	4,424

4.2.1.2 Proposed Action and Reasonable Foreseeable Development

Amendment #11, if approved as submitted, would increase the permit by 567.5 acres (299.8 acres federal (BLM) surface and 267.7 private surface). The disturbed area in Amendment #11, which would include mined areas plus mine related disturbances such as haul roads and stockpiles etc., would total approximately 160 acres over a 5-year life of mine.

The RFD area would involve adding about 1,200 acres of Federal land and 1,230 acres of private land to the Alzada North permit and about 350 acres would be added to the Alzada South permit. Mining and reclamation could occur on about 50% (1,390 acres) of the permitted RFD land using the above described methods. These acreages are a rough estimate, “best guess” scenario based on limited exploration drilling. As bentonite reserves are identified and mine plans are developed, acreages will change.

4.3 Topography

4.3.1 Proposed Action, Direct and Indirect Impacts

The proposed action will result in alteration of the existing landscape during mining of the area. During reclamation activities, the affected land will be contoured to blend in with the surrounding topography, and generally slopes will be no steeper than 5:1 which will help provide stabilization against wind and water erosion.

Bentonite on the proposed mine sites averages 3 ½ feet thick; however, the reduction in elevation will be generally less than the thickness of the bentonite seam removed because of overburden swelling. On relatively level sites, post-mine contours will approximate the original contours.

The restored land surface will have less topographic diversity than before mining.

Reduction of topographic diversity can reduce vegetation and habitat diversity, which can result in a reduction of wildlife carrying capacity in restored areas for some species.

A flatter surface will decrease the surface water run-off rates after precipitation events, thereby reducing the erosion on reclaimed soils and a flatter surface will allow for greater infiltration of precipitation.

4.3.1.1 Proposed Action, Cumulative Impacts

The proposed action would add 160 more acres to 4,424 acres of disturbed land on both North and South mine areas (much of this disturbance has been reclaimed). This will result in more land with gentler slopes and lower topographic diversity to that which already has been impacted by mining. This impact would be a permanent affect to the landscape.

4.3.2 Alternative A (No Action), Direct and Indirect Impacts

The additional impacts to the topography as described in the proposed action would not occur, but permitted mining areas would continue to be impacted until currently permitted reserves are exhausted.

4.3.2.1 Alternative A (No Action) Cumulative Impacts

There would be no additional cumulative impacts beyond that which would occur from already permitted mining if the proposed action was denied.

4.3.3 Mitigation

Additional mitigation for topographic impacts would not be necessary.

4.4 Air Quality

4.4.1 Proposed Action, Direct and Indirect Impacts

Fugitive dust generated by wind erosion on the moderate to severely susceptible soils would elevate total suspended particulates (TSP) on an average background concentration of $15 \mu\text{g}/\text{m}^3$; this would continue on a long-term basis. Land treatments would increase surface exposure and raise fugitive dust concentrations to about $30 \mu\text{g}/\text{m}^3$ over the short term, until vegetation is well established. Increased vegetative production would have a positive effect on reducing fugitive dust generation from wind erosion. Chemical control of noxious weeds could produce very localized, short term, virtually unmeasurable impacts to air quality by drifting in and around the treatment areas.

Bentonite mining and hauling activities are a source of particulate and gaseous emissions. Fugitive dust emissions are generated by mining, hauling and stockpiling operations. Gaseous air pollutants include sulfur dioxide (SO_2), carbon monoxide (CO), oxides of nitrogen (NO_x) and volatile organic compounds (VOC). The source for these emissions is the diesel-fired engines used to power mining equipment and haul trucks. All of the emissions from mining bentonite are fugitive emissions emitted at ambient temperature with no momentum. These emissions are not expected to impact visibility or air quality to a measurable degree.

4.4.1.1 Proposed Action, Cumulative Impacts

Fugitive dust and gaseous emissions produced from this action could be cumulative to dust and emissions contributed by adjacent mining. However, as mining occurs in the proposed area, mining in other areas will cease without any true cumulative impacts to air quality from the mining activities. It is unlikely that direct air quality impacts from the proposed action will violate any local, state, tribal or federal air quality standards.

4.4.1.2 Mitigation

Dust emissions are partly mitigated by intermittent dust suppression of the haul roads.

4.4.2 Alternative A (No Action), Direct and Indirect Impacts

The no action alternative would not have additional impacts to air quality beyond those already expected in currently permitted mining as no newly permitted mining would take place.

4.4.2.1 Alternative A (No Action) Cumulative Impacts

There would be no cumulative impacts beyond currently mined and permitted acreage limits as no new mining would take place.

4.4.2.2 Mitigation

The main haul roads are watered to suppress dust from bentonite hauling.

4.5 Hydrology

4.5.1 Groundwater, Proposed Action, Direct and Indirect Impacts

Bentonite mining rarely occurs at depths sufficient to contact groundwater. When exploratory bentonite drilling does occasionally encounter shallow groundwater, a perched water table; it is not of sufficient quantity to provide livestock or domestic use but may produce small wet areas high on the ridges. These areas are avoided by mining because of the high cost to recover the clay in wet areas.

During the mining procedure, a small amount of bentonite is usually left in situ. The small amount of bentonite left in the excavated pit, impedes downward migration of waters from the overlying reclaimed land. It may also help re-establish the perched groundwater table and the resulting wet areas at some bentonite outcrops.

Based on the data that no significant groundwater is known to exist above the deepest projected depth of mining and there is no known aquifer recharge area within the mine area, it is not anticipated that groundwater will be impacted.

4.5.2 Surface Water, Proposed Action, Direct and Indirect Impacts

During active mining operations, water quality will decline due to an increase in total suspended solids (TSS) during storm events. Because of the diversion around the mine, the water picks up more sediments and other dissolved solids running through constructed ditches and diversions than it normally would flowing across the native prairie. However, since the native undisturbed soils in the area are naturally erosive and dispersive, and with sediment control measures taken by ACC and with the filtering action of the off site vegetation as the runoff water leaves the disturbed area; it is anticipated that there will not be a discernable impact from the background sediment yield or the general quality at any intermittent drainage.

Post-mine reclamation of the land may actually enhance the long-term surface water quality because post-mine vegetative cover often exceeds that of the native vegetation, which will decrease erosion, thereby increasing water quality.

Water quantity from the reclaimed areas will not be significantly reduced as a result of mining. The reclaimed land will have gentler slopes, which tends to reduce surface run-off rates by increasing infiltration rates. However, the areas reclaimed in relationship to the total watershed acres of the intermittent drainages are small and the yields are not reduced significantly because the high clay content of the soils tends to seal over relatively quickly, reducing infiltration and not greatly affecting the runoff quantity. Small pits may be left for stockwater but these will retain runoff from relatively small areas, less than 30 acres, therefore the changes at an intermittent drainage will not be measurable.

4.5.2.1 Surface water, Proposed Action Cumulative Impacts

Only ephemeral drainages are affected by actual mining activity. Alteration of flow patterns of ephemeral drainages occurs during mining by redirecting flow around the active mine site, which is typically 2-4 acres. An increase in suspended and dissolved solids in runoff waters from the disturbed areas occurs during the period of mining and until the areas are revegetated. Location and courses of ephemeral drainages are re-established during the reclamation process. Reclaimed land typically exhibits more vegetative cover than pre-mine conditions, which helps reduce the sediment load in run-off of the overall permit area.

On lands contained within Permit #00297, approximately 2,014 acres have been disturbed, approximately 1,496 acres are in some stage of reclamation where sedimentation has been reduced or eliminated. The remaining disturbed acres, along with haul roads and spur roads, will continue to contribute suspended and dissolved solids to run-off waters until fully revegetated. The proposed action would cause additional sedimentation during mining activities; however, concurrent reclamation will tend to minimize it.

Stockponds are sometimes constructed by ACC during the reclamation process at the request of the landowner. In addition to enhancing the water resources for livestock grazing, these stockponds also provide wetland habitat for wildlife and serve as a sediment filtration system, improving the quality of runoff water. In accordance with MTDNRC rules, Application for Beneficial Water Use Permit will be filed with the Water Resources Division for all permanent stockwater or sediment retention ponds.

Since ACC has been mining under contract in the Alzada area, seven stockponds have been created for landowners.

Federal pre-FLPMA (1976) and State pre-Law (1980) acres of disturbance have not been reclaimed. Without the reshaping of the spoils, which reduces the gradient, re-establishment of drainage ways and the vital topsoil plus vegetation has left areas that continue to produce excessive sediment. As noted in previous chapters, the re-establishment and maintaining of the vegetative cover is the critical element in reduction of sediment. These pre-FLPMA areas continue to produce sediment in quantities exceeding any other area, other than where the vegetation has been removed or not available because of the soil types on the surface.

4.5.3 Surface Water, Alternative A (No Action), Direct and Indirect Impacts

Without the removal of the vegetative cover or topsoil, there is no expected increase in water quality or an expected decrease in water quantity.

4.5.3.1 Surface Water, Alternative B (No Action), Cumulative Impacts

Excessive sediment and a subsequent decrease in water quality is expected from the pre-FLPMA and pre-Law mining areas.

4.5.4 Mitigation

Surface flow will be diverted around the upslope side of mining operations by constructing v-ditches and/or berms with a patrol/blade. Water will be channeled within the original watershed to lessen the effect on water distribution in the area. Controlling run-on will reduce water run-off from disturbance areas, minimizing potential pollution due to suspended and dissolved solids. Sediment control devices will be employed where excessive run-off threatens to carry sediment to undisturbed lands.

Stormwater originating from disturbed lands where topsoil has been removed will be directed into small catch basins wherever possible to allow the heavier sediments to

remain within the limits of the disturbed area. These sediment traps will typically be 12 feet wide and 20 feet long and approximately 2-3 feet deep. They will be placed at logical low points around the disturbed perimeter where stormwater would be expected to exit. The traps will be maintained on a regular basis so they do not become overfilled with sediment.

No drainage will be blocked by stockpiling of overburden or soils. If excessive erosion occurs within a diversion, sediment pits, rows of straw bales, sediment fences, and/or water bars will be installed. Reclamation operations will include removal of all temporary diversions and reestablishment of through drainage. No perennial or intermittent streams will be disturbed by the mining operations. Only ephemeral drainages will incur actual surface disturbance from mining activity, and these drainages will be re-established after mining. Reconstructed channels will slope 1% or less for the purpose of minimizing water velocity to reduce erosion. The flat-bottom trapezoidal channels will be designed according to watershed size, peak flow, and velocity calculations. If topography is not conducive to maintaining 1% grade, steep slope channel design practices will be employed, such as installing rip-rap or rolled erosion control products. Generally, ephemeral channel construction will consist of a flat, scraper width (12 foot) bottoms that will meander as much as possible. The goal will be to approximate original pre-mine channel cross section and to minimize erosion. To achieve this goal some experimental channels will be designed and built for a 2 year, bankfull discharge event. Typically this design would call for a 3-6 foot wide channel bottom about ½ to 1 foot deep and a 4:1 side slope. The reasoning behind the smaller channel is that most erosion occurs during repetitive smaller events rather than the infrequent large event. Consequently, a smaller “pilot” channel will naturally develop within a 12 foot wide bottom. A channel specifically created for these smaller events may help reduce erosion by eliminating the process, which creates the pilot channel in a wider bottom.

In all reconstructed channels, seeding will be done perpendicular to water flow to reduce erosion, and water bars and/or straw bales may be installed to encourage meandering within the channel. Tall wheatgrass may be added to the standard seed mix where applicable for erosion control and wildlife cover.

4.6 Wetlands

4.6.1 Proposed Action, Direct and Indirect Impacts

No new ponds are proposed in the mine area, so there will be no impact.

4.6.1.1 Proposed Action, Cumulative Impacts

No change from the present is expected.

4.6.2 Alternative A (No Action), Direct and Indirect Impacts

No change is expected because no new water source is being constructed.

4.6.2.1 Alternative A (No Action), Cumulative Impacts

Ponds have been constructed throughout mined areas in Permit #00297. These were constructed primarily for livestock water sources, but also serve to benefit other species by providing a continual source of water. The previous addition of stockwater ponds or sediment retention ponds and the general seclusion of the area has benefited wildlife species such as waterfowl and some mammals.

4.6.3 Mitigation

No additional mitigation is required.

4.7 Wildlife

4.7.1 Proposed Action, Direct and Indirect Impacts **Direct Impacts**

Direct impacts to wildlife resources include

loss of habitat through construction activities, location of infrastructure (haul roads, mine pits, etc), and mortalities resulting from collisions with vehicles. A number of small animals, such as small mammals and reptiles, which cannot quickly leave the area will be destroyed by the mining operations.

The proposed action would add 567.5 acres to ACC's plan of operations, of which approximately 160 acres would be disturbed by mining operations. This is a direct temporary loss of 160 acres of wildlife habitat (both forage and cover). Successful reclamation would stabilize disturbed sites and attempt to restore disturbed areas to pre-disturbance conditions. Reclamation will not always recreate pre-disturbance values. Changing a shrub-grassland with intermingled forbs, to an environment characterized by a dominance of grasses, would affect those species of wildlife, which are sagebrush obligates by reducing vital habitat and forage. Some species of passerine birds, some small mammals and reptiles, as well as sage grouse and pronghorn antelope would be affected by this change. However, due to the minimal amount of sagebrush cover on Amendment #11 lands pre-mine, the temporary loss of habitat should not affect the long term viability of these species in the project area. In addition, ACC wildlife surveys associated with previous mining operations show relative low and stable wildlife populations.

Shrubs, particularly big sagebrush, provide important winter forage for big game, and cover for sage grouse. Removal of shrubs during mining will decrease forage availability and reduce the winter carrying capacity of sagebrush areas. Reclamation activities will restore forage vegetation (grasses and forbs) in a relatively short period of time (1-3 years), but the forage will typically be available only during the summer period because during the winter months it is often unavailable under snow. Forbs generally are slower to re-establish than grasses. Forbs will also tend to re-establish via natural resources. Vegetation that is suitable for wildlife cover (shrubs) will require a longer period of time. As shrubs

begin to grow in reclaimed areas, they too are primarily available in the summer months as forage, and until they grow into mature plants, able to provide hiding and thermal cover (10-30 years), are also often unavailable during winters. The most conspicuous shrub on the Amendment #11 project is Black greasewood which re-establishes fairly easy on reclaimed lands and provides wildlife cover.

The increase in vehicle traffic on the proposed haul road spur between the Amendment #11 mine sites and Highway 212 could result in the increase in collision-related mortalities to all wildlife species. The most notable species that could be impacted include mule deer, upland and passerine birds, small mammals and reptiles/amphibians. These additional mortalities would not have a noticeable impact on the local populations of the species affected.

No known threatened or endangered wildlife species will be affected by ACC's operations. No critical habitats for wildlife species are present or will be affected by mining.

Indirect Impacts

Indirect impacts from development actions occur to wildlife species that are sensitive to human activities, require large blocks of uniform cover, or are displaced by other species or individuals of their own species. In addition to the 160 acres that would be directly disturbed, an additional 400 acres contained within Amendment #11 boundaries could become less suitable because of the nearby mining and associated human activities.

Similar habitat is available in immediately adjacent areas, and will be used by those animals mobile enough to leave when mining operations begin. Some redistribution of pronghorn, mule deer, upland game birds, such as sage grouse, non-game birds, and some small mammals will occur during mining as they are displaced to adjacent lands. Some additional competition will occur

between displaced wildlife and species already inhabiting non-project habitats, but that level is difficult to measure.

About 70% of the wildlife habitat that is included in the Amendment #11 proposal would not be directly impacted. However, indirect affects of the mining activity would include changes to traditional use and movement patterns, disruption to normal foraging and reproductive habits, and increased energy expenditure by most wildlife species in the project area. The species most impacted by habitat fragmentation include those with larger home ranges, such as big game, upland birds and raptors. Passerine and other neotropical migrant birds are impacted by interruptions to preferred nesting habitat, improved habitat for undesirable competitors such as brown-headed cowbirds and increased potential for predation. The pre-mine grassland/shrub habitats have a low density and diversity of non-game bird species. The amount of displacement by mining will be minimal. Mining will be outside woodlands, riparian habitats, or wetlands where higher bird densities are found.

Red-tailed hawks nest in the area, south of Highway 212. For three years in a row, an active nest has been observed about ½ mile south of Amendment #11 at various trees along Thompson Creek and near ranch buildings. Highway 212 will help create a visual and physical buffer between an active nest and mining activity in this area. Mining activities could shift nesting to suitable habitat and nesting areas less affected by mining activity, but it should not have an appreciable affect on red-tailed hawks because of the abundance of nesting sites along Thompson Creek and the hawk's known tolerance to nearby human activities.

Ferruginous hawks also nest in the area, on a ridge along Highway 212, 1 ½ to 2 ¼ miles northwest and over the ridge from proposed mining on Amendment #11. The proposed mining activity should not affect their nesting. Impacts to prairie dogs and species associated with prairie dog towns (i.e., mountain plover,

burrowing owl) would be minimal, because no prairie dog towns are within the project area.

As with any disturbance, some wildlife species and individuals, including big game, can and would acclimate to sustained and regular human contact providing that contact is not perceived as threatening. Many of the small mammal species are disturbance tolerant, and quickly re-establish their populations on reclaimed land.

Aquatic life

There are no known threatened or endangered aquatic life species (or their habitats) that will be affected by ACC's operations.

Minimal effects may occur to the fish species and other aquatic life located downstream in Thompson Creek primarily attributed to increased suspended sediment and dissolved solids. However, appropriate erosion control measures will lessen this effect.

Minimal effects may occur to aquatic invertebrates and amphibians within the project area. This is due to the displaced habitat caused by mining in ephemeral drainages. These species will most likely migrate to other suitable habitats. All of the habitat within the project area will be reclaimed after the mining is completed.

4.7.1.1 Proposed Action, Cumulative Impacts

Cumulative impacts would include wildlife injuries and mortalities, and the loss of additional habitat. Habitat loss would increase from mining activities. Habitat loss, direct and indirect, over the life of the project (5 years) could approach or exceed the 160 acres included in the proposed expansion of ACC's plan of operations. Reclamation would not always recreate pre-disturbed conditions or values. Because sagebrush cover is minimal on Amendment #11 land, those wildlife populations dependent on sagebrush (i.e., sage grouse, mule deer, and some passerine species) would be minimally affected. In

addition, pre-disturbance surveys and monitoring over the past 20 years have indicated that these species exist in relatively low numbers in the area, and primarily occupy habitats outside proposed project areas. Therefore, the cumulative impacts to wildlife would likely be minimal.

Indirect cumulative impacts would include disturbance to, or displacement of, certain wildlife species from human activities, habitat loss, and potential changes in animal behavior and movement patterns. Again, the surveys and monitoring efforts indicate that most species use habitats outside the proposed mining areas, so the impacts would likely be minimal.

4.7.2 Alternative A (No Action), Direct and Indirect Impacts

There would be no impacts to wildlife in addition to those analyzed for previous ACC expansions and plans of operation. If no action, meaning no additional areas will be mined, then no direct or indirect impacts, beyond those already permitted, will occur.

4.7.2.1 Alternative A (No Action), Cumulative Impacts

No additional cumulative impacts would occur, beyond those identified and permitted for previous mine plan amendments, if the no action alternative is adopted.

4.7.3 Mitigation

Appropriate erosion control measures, such as sediment erosion control structures (silt fences, straw bales, etc.) will be installed prior, during and after mining is completed. These erosion control structures should be left for at least one year after mining is completed and erosional stability is achieved.

4.8 Cultural Resources

4.8.1 Proposed Action, Direct and Indirect Impacts

No eligible cultural resource sites were located during the 2002 and 2005 surveys conducted on Amendment #11 lands; therefore, ACC's mining activities should have no impact on eligible cultural resources.

Old Highway #23 (from the 1930's), site 24CT1367, which crosses a portion of Amendment #11 was surveyed by a BLM archeologist. It was determined that the road is not an eligible historic site. The historic debris scatter, site 24CT1368, located on the edge of the project area was also determined not to be an eligible historic site.

Based on the results of the conducted surveys, it is determined that the project area and the project's Area of Potential Effect has been adequately surveyed for cultural resources and that no eligible cultural resources were identified within the project's Area of Potential Effect. The proposed undertaking will occur in an area where no eligible sites exist. Consequently, no cultural resources considered eligible for the National Register of Historic Places would be impacted or affected by the proposed undertaking.

4.8.1.1 Proposed Action, Cumulative Impacts

There have been little to no cumulative impacts to cultural resources, to date, as a result of past, current and proposed actions. Few sites have been located and recorded in the project area and none have been impacted. The Company has avoided impacting all cultural resource values from their past and current actions. Had cultural sites been located, they would have been brought to the attention of the proper local, state, and federal officials through normal reporting procedures. Had significant sites been found, a variety of mitigation measures would have been utilized to mitigate the impacts to the sites, ranging from data collection (excavation) to on-site

protection to avoidance.

The area is generally considered to be poorly suited for aboriginal occupation. Due to the compact clay hard pan soils throughout the area the potential for locating significant cultural remains is considered low. The only cultural sites to have been located near ACC's mine sites in the Alzada area are located in Section 36, T. 9 S., R. 58 E., where six sites were found by Anthro Research in 1984; ACC has avoided these sites by marking their boundaries with steel posts.

Consequently, there is little likelihood of there being significant impacts to cultural resource values as a result of cumulative affects of these actions.

4.8.2 Alternative A (No Action), Direct and Indirect Impacts

There would also be no impacts to cultural resources as a result of the selection and implementation of the No Action alternative. Unanticipated discoveries during mining and road construction would be dealt with through implementation of the mitigation described above.

4.8.2.1 Alternative A (No Action), Cumulative Impacts

There would be no cumulative impacts as no additional mining would take place.

4.8.3 Mitigation

In the event that buried cultural resource values are located during earth disturbing activities, the individual/ operator/contractor shall immediately bring to the attention of the BLM Field Manager any and all antiquities or other items of cultural or scientific interest, including but not limited to historic or prehistoric ruins, fossils, artifacts or burials, discovered as a result of his operations. The Miles City Field Office must be notified and operations must cease if any archaeological or paleontological resources are discovered as a result of operations, and shall leave such

discoveries intact until told to proceed by the BLM Field Manager. Operations may resume only after receipt of BLM approval. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Operator shall suspend all operations in the immediate areas of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The operator will be responsible for the cost of evaluation and any decision as to proper mitigation measures to be made by the authorized officer after consulting with the operator.

The operator is responsible for informing all persons in the area who are associated with this project that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during construction, the operator is to immediately stop work that might further disturb such materials, and contact the authorized officer (AO). Within five working days the AO will inform the operator as to:

- whether the materials appear eligible for the National Register of Historic Places;
- the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary); and,
- a timeframe for the AO to complete an expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate.

If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process,

the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation costs. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume operations.

We believe the comment we received from the Rosebud Sioux Tribe stating that they "...have concerns for this project to proceed as planned." and "The Rosebud Sioux Tribe objects to any kind of mining" is not a viable comment BLM can respond to as it lacks any sort of specificity regarding cultural issues or other concerns.

4.9 Soils

4.9.1 Proposed Action, Direct and Indirect Impacts

Disturbance of the existing soil horizons occurs during removal and replacement of the topsoil and subsoil. This activity results in alteration of the in situ soil fabric. Bulk density of soil horizons is reduced, increasing the available water capacity. This reduction in density lessens with time, and does not appear to have any negative effects. The temporary increase in available water capacity assists the revegetation process.

The proposed action requires all usable topsoil to either be salvaged and stockpiled or applied directly to contoured areas. Best management practices are utilized to insure minimum erosion from the stockpiled soils and overburden. Topsoil piles and direct-applied areas will be seeded to protect them from erosion. However, some soil will be lost to wind and water erosion until vegetation is re-established. This loss should be minimal depending on the intensity, frequency and duration of erosion-producing events.

Rock, bentonite and shale outcrops support little or no vegetation and will not be salvaged

as topsoil. Vegetation is often spotty due to soil chemical and physical characteristics in these areas.

4.9.1.1 Proposed Action, Cumulative Impacts

The post-mining soils will be replaced at a more uniform depth than the pre-mine soils were found. The average soil replacement depth in the areas proposed for mining will be 10 inches for topsoil and 12 inches for subsoil, based on pre-mine soil studies. This will have a beneficial impact on areas that had little or no topsoil prior to mining.

Pre-mine clay hard pan soils allow little water penetration and will be benefited by being broken up by dirt-moving equipment; it will be possible to establish vegetation on areas that were sparsely vegetated before mining.

The reclaimed lands will have gentler slopes than pre-mine, which will reduce surface run-off rates and increase infiltration rates.

Replaced soils should support a stable and productive vegetative cover capable of sustaining post-mining land uses, which include livestock grazing and wildlife habitat. Therefore, potential impacts to the soil resources on Amendment #11 will not be adverse.

4.9.2 Alternative A (No Action), Direct and Indirect Impacts

The no action alternative would not disturb soils of the area beyond existing permit levels and would have no direct or indirect impacts.

4.9.2.1 Alternative A (No Action), Cumulative Impacts

There would be no cumulative impacts to soils of the area as these soils would not be disturbed beyond existing permit levels.

4.9.3 Mitigation

Topsoil will be salvaged and direct hauled to

previously mined areas. This will promote quicker vegetative establishment, reducing potential soil erosion by wind and water. Material not suitable for vegetative growth will be placed beneath the root zone, improving vegetative growth and productivity. No mitigation will be needed with the no action alternative.

4.10 Vegetation

4.10.1 Proposed Action, Direct and Indirect Impacts

During the stripping operations, there will be a loss of vegetation potential for increased erosion until vegetation is re-established. Reclamation activities will be conducted concurrently with mining on the backfilled pits and immediately following mining. This means that the entire mine site will not be stripped of vegetation at any one time, and seeding will be conducted each spring or fall on the lands that have been prepared for seeding.

ACC's goal is to reclaim through seeding each year approximately the same amount of acreage as was affected by mining that year.

Most of the reclaimed land will be seeded with a grass/forb mixture that is perennial and self-sustaining without the use of fertilizers or irrigation. Since 1988, ACC has included Winter wheat in the seed mix as a nurse crop at the individual species application rate of 10 lbs. PLS/acre. This practice has demonstrated that the nurse crop concept works well in controlling erosion and weed invasion. Within three years after the initial seeding, little evidence is seen of wheat as the planted species become established.

The difference in vegetation species would impact various wildlife species until shrubs and forbs, which are located on adjacent native land can become established on the reclaimed land. Reintroduction of these species may be quicker on areas where topsoil is direct-hauled ("livespread").

Seeded grasslands can provide valuable wildlife habitat because, as discussed in the wildlife section, big game animals will concentrate on grassland species during the spring and summer months, and small mammals are suited to a variety of habitats.

The following describes the species in ACC's seed mix:

- Western wheatgrass is a long-lived, sod-forming, drought resistant perennial native grass. It is one of the first grasses to grow on the range in the spring, and it cures well on the stem and retains its protein content, which provides for good winter grazing.
- Slender wheatgrass is a perennial native bunchgrass with a fibrous root system. Seedlings are strong and easily established. It is drought tolerant, moderately salt tolerant, and very cold tolerant.
- Streambank wheatgrass is a sod-forming perennial native grass. It is drought tolerant and moderately tolerant to saline or alkaline soils. It has strong rhizomes and spreads rapidly to form a good ground cover. It has special uses in soil and water conservation work and offers excellent protection against soil erosion.
- Green needlegrass is a long-lived perennial native grass. It has short awns, which are not harmful to animals, and it is a valuable component of the range. It grows to a height of 1.5 to 3 feet and provides good cover for duck nesting and small mammals. It produces a good yield of forage that is palatable and nutritious early in the season.
- To increase diversity on the reclaimed land, available native forbs will be added to the seed mix each year. Depending on cost and availability, following are some of the species that may be used: Purple prairie clover, White prairie clover, Western yarrow,

and annual wild Sunflower.

There are no known threatened or endangered plant species within the study area; therefore, there should be no impacts to these species. Bentonite Corporation has reported a BLM "watch" species (Blue toadflax) south of the Ridge Road and east of their Vol Ash 6 claims. ACC has not encountered this species on their Amendment lands.

Evidence of mining and reclamation will remain for the long term until vegetation and erosion return the area to equilibrium with the surrounding environment.

4.10.1.1 Proposed Action, Cumulative Impacts

The cumulative impacts on vegetation would include past present and future disturbances to the landscape, in particular the vegetation. That would mean that in Permit #00297, approximately 2,014 acres of vegetation have been disturbed to date, and an additional 160 acres would be disturbed under the proposed action for a total of 2,181 acres of disturbance. The RFD could include another 1,390 acres of disturbance for a total potential long term disturbance at Alzada North of 3,571 acres (inclusive of the RFD scenario).

All the lands would be contemporaneously reclaimed as mining takes place and seeded with native species. Therefore, only a small portion of the total mine area would be unvegetated at any one time. Many different stages of vegetative establishment will occur on the mine area over time ranging from fully revegetated to newly seeded areas. The mined lands will eventually reach a pre-mine level of vegetation.

4.10.2 Alternative A (No Action), Direct and Indirect Impacts

No additional impacts beyond those already permitted would occur to the vegetation.

4.10.2.1 Alternative A (No Action), Cumulative Impacts

There would be no cumulative impacts beyond those that will occur from lands, which are already permitted for mining.

4.10.3 Mitigation

Erosion control, seeding plans and grazing modifications described in this document are sufficient mitigation to help offset impacts to vegetation.

4.11 Grazing Resources

4.11.1 Proposed Action, Direct and Indirect Impacts

During the mining and the reclamation process, BLM lands within the disturbance area will be unavailable for livestock uses and livestock grazing will be excluded through the construction of a fence placed around reclaimed areas that conforms to BLM criteria. The BLM will modify the grazing activities through the grazing decision process specified within the Title 43 CFR 4160 to suspend the AUMs within the proposed action.

Mining on Amendment #11 will result in the suspension of 59.2 AUMs within the S&L Sheep Ranch Permit.

After two growing seasons, the BLM will utilize an interdisciplinary team process to determine the applicability of permitting livestock grazing on the reclaimed BLM lands. If the interdisciplinary team determines that livestock grazing will not impair rangeland health standards, then the BLM will coordinate with the permittee to activate the suspended use. Once an application has been completed, the BLM will issue grazing decision(s) as described above to place the suspended use into active use that is available for livestock grazing.

On private lands not tied to the Federal AMP, ACC reaches a grazing agreement with the landowner, or the reclaimed land is fenced to protect the site from livestock grazing for 2-3 years until the perennial grasses are

established.

The reclamation plan is designed so that the affected lands are stabilized and will support both livestock grazing and wildlife after mining.

4.11.1.1 Proposed Action, Cumulative Impacts

BLM lands that are removed from grazing will continue to accrue as new areas are mined and reclaimed until such time as BLM determines that the reclaimed lands can be returned to grazing use. It is anticipated that the AUM's affected will be continually adjusted over the years as mining and reclamation progress. Ultimately mining will cease and the grazing practices will return to normal.

4.11.2 Alternative A (No Action), Direct and Indirect Impacts

Existing impacts to grazing will continue up to currently permitted mining levels.

4.11.2.1 Alternative A (No Action), Cumulative impacts

Cumulative impacts under this alternative

will accrue only up to the presently permitted mining levels as no new mining would occur.

4.11.3 Mitigation

No new mitigation would be required beyond those currently employed.

4.12 Lands and Realty

4.12.1 Land Use Authorizations and Ownership, Proposed Action, Direct and Indirect Impacts

The proposed action would not have any direct or indirect impacts to land ownership. A right-of-way would be issued for an existing ranch road in Section 10, T. 9 S., R. 59 E. Carter County currently holds an R.S. 2477 County Road R/W (MTM-61105) on this road, but

they plan to relinquish this right-of-way. The grazing permittee(s) would apply for the new right-of-way. Other existing rights-of-way would be avoided and would not be impacted by the proposed action.

4.12.1.1 Land Use Authorizations and Ownership, Proposed Action, Cumulative Impacts

The proposed action will not have any cumulative impacts to land ownership or to the land use authorizations.

4.12.2 Land Use Authorizations and Ownership, Alternative A (No Action), Direct and Indirect Impacts

Alternative A, the no action alternative, will not have any direct or indirect impacts to the land use authorizations or land ownership.

4.12.2.1 Land Use Authorization Ownership, Alternative A (No Action), Cumulative Impacts

Alternative A, the no action alternative, will not have any cumulative impacts to the land use authorizations or land ownership.

4.12.3 Mitigation

The applicant would need to assure existing authorized rights-of-way are avoided. All newly constructed roads on federal surface would be reclaimed or reduced to two-track trails. A right-of-way would be issued to the grazing permittee(s) for the existing ranch road. Stipulations for the proposed right-of-way can be found in Appendix 2. Carter County would relinquish their R.S. 2477 County Road Right-of-Way MTM-61105 on the existing ranch road.

4.13 Recreation

4.13.1 Proposed Action, Direct and Indirect Impacts

The area is not a high-use recreation use. Recreation use consists primarily of big game

hunting and bird hunting although hunting is restricted on the adjoining private lands. Mining operations temporarily remove small acreages, which have a minor impact on big game distribution. Existing ponds are not affected by mining operations. As new areas are mined, other areas are being reclaimed with some land reaching full grassland restoration each year. This provides additional habitat for displaced big game and opportunity for hunting.

Stockponds, which are created on some mine sites have added areas for hunting ducks and geese.

4.13.1.2 Proposed Action, Cumulative Impacts

The impacts would essentially be the same as those described above except more land will be opened up to vehicular access. This would probably improve the chances of success for hunters who hunt on federal lands.

While the vehicular access would be opened up to cover more land as the road network expands, the recreational hunting experience could be diminished for some hunters due to the altered nature of the landscape and mining activity. The topography will be permanently altered but would eventually become less noticeable as the areas become revegetated.

These impacts would diminish with time when mining ceases and the land is fully reclaimed.

4.13.2 Alternative A (No Action), Direct and Indirect Impacts

The impacts would be as described above up to the limits of previously approved mining.

4.13.2.1 Alternative A (No Action), Cumulative Impacts

The cumulative impacts would be as described above up to the limits of previously approved mining.

4.13.3 Mitigation

Mitigation is not required for recreational resources.

4.14 Visual Resources

4.14.1 Proposed Action, Direct and Indirect Impacts

Highway 212 is located along the south boundary of Amendment #11, therefore, visual impacts from ACC's mining operations will be visible to motorists on the highway and ranchers in the area.

At times, haul trucks from the mine will also be entering and leaving the highway at that location further drawing attention to the mining activity.

The proposed mining activity will continue to modify the landscape by creating changes in line, form, color, and texture. In the short term, new temporary landforms will be created, which include stockpiles, pits and haul roads. Permanent changes to landforms will also occur. After reclamation is complete, the topography will generally be more subdued with gentler, vegetated rolling hills replacing sharper, partially vegetated ridges or bare knobs.

4.14.1.1 Proposed Action, Cumulative Impacts

As described above, permanent changes to the landscape will occur. The cumulative impacts on the visual landscape would include past present and future disturbances. That would mean that at Alzada North (Permit #00297) about 2,014 acres have been disturbed to date, and an additional 160 acres would be disturbed under the proposed action for a total of 2,181 acres of disturbance. The RFD could include another 1,390 acres of disturbance for a total potential long term disturbance at Alzada North of 3,571 acres (inclusive of the RFD scenario).

4.14.2 Alternative A (No Action), Direct and Indirect Impacts

The impacts to the landscape, as described above, would continue to occur up to the limits of the presently permitted operations.

4.14.2.1 Alternative A (No Action) Cumulative Impacts

The cumulative impacts to the landscape, as described above, would continue to occur up to the limits of the presently permitted operations.

4.14.3 Mitigation

Current reclamation practices are sufficient to mitigate visual impacts to the landscape.

4.15 Noise

4.15.1 Proposed Action, Direct and Indirect Impacts

Noise, which results from the mining operation is within acceptable ranges for workers. Noise level measurements are taken periodically by MSHA (Mine Safety & Health Administration) and no citations have been issued to ACC for exceeding noise limits. The noise impact would be minimal for the nearest residents which are approximately $\frac{3}{4}$ mile from the nearest proposed mining.

4.15.1.1 Proposed Action, Cumulative Impacts

There will be no cumulative impacts related to noise as no new additional mining equipment is proposed to be used and the proposal does not represent an increase in production rates.

4.15.2 Alternative A (No Action), Direct and Indirect Impacts

Under the no action alternative, current levels of noise will continue at the usual and

customary times that they occur until existing permitted mine lands are mined out.

4.15.2.1 Alternative A (No Action)

Cumulative Impacts

There would be no cumulative noise impacts from this alternative.

4.15.3 Mitigation

Additional mitigation is not required.

4.16 Transportation Facilities

4.16.1 Proposed Action, Direct and Indirect Impacts

Access to Amendment #11 mine sites will be approximately three miles northwest of Alzada at an existing approach of Highway 212. Hauling directly onto Highway 212 would represent a shift in the location of heavy truck traffic currently hauling from other mine sites and entering the highway from the Ridge Road (county road), approximately two miles south of Amendment #11.

The bentonite is hauled by contract haul trucks. Hauling shuts down during inclement weather and during some months, but when active there may be 75 or more loads per day hauled from ACC's Montana mine sites. This represents a fairly large increase of additional heavy truck traffic on about three miles of Highway 212 while hauling from Amendment #11. However, this also represents the status quo and additional haul truck traffic from the proposed action is not anticipated.

4.16.1.1 Proposed Action, Cumulative Impacts

It is possible that the road surface of Highway 212 could suffer a higher level of wear and tear due to the accumulated heavy truck traffic resulting from mining, however,

it is not possible to document or quantify this supposition.

4.16.2 Alternative A (No Action), Direct and Indirect Impacts

Under this alternative, there would be no shift in access points to Highway 212 and current

transportation impacts would continue until permitted reserves are exhausted.

4.16.2.1 Alternative A (No Action) Cumulative Impacts

It is possible that the road surface of Highway 212 could suffer a higher level of wear and tear due to the accumulated high truck traffic resulting from mining until currently permitted reserves are exhausted, however, it is not possible to document or quantify this supposition.

4.16.3 Mitigation

Proper traffic control and safety signs should be installed on Highway 212, at or near the new access point. This should include signs advising motorists of trucks entering the highway as well as a stop sign for the haul trucks at the highway entry point.

4.17 Social and Economic Conditions

4.17.1 Proposed Action, Direct and Indirect Impacts

ACC's proposed action will result in the continued production of bentonite at current levels in the near term. Employment levels, wages, expenditures and taxes paid in the Tri-state area would continue.

During the course of this analysis, no alternative considered resulted in any identifiable effects or issues specific to any minority or low income population or community. The agency has considered all input from persons or groups regardless of age, race, income status, or other social or economic characteristics.

4.17.1.1 Proposed Action, Cumulative Impacts

Expansion of the mine into the unexplored areas west of the existing operation would extend the economic impacts described above into the foreseeable future.

4.17.2 Alternative A (No Action), Direct and Indirect Impacts

Denial of the Mine Permit Amendment application would result in an 80% reduction in ACC's Montana production within two years (Lyndon Bucher, personal conversation, 5-21-04). The direct impact would be a corresponding number of layoffs and reduction in hours worked at both the mine and the plants. The indirect impacts include a reduction in wages, Montana income taxes, Wyoming and South Dakota sales taxes, and property taxes. Carter County would be impacted the most due to the reduction in taxable value for property taxes. Based on 2002 data this could amount to nearly one third of the total taxable value.

4.17.2.1 Alternative A (No Action) Cumulative Impacts

The direct and indirect impacts would be lessened in the foreseeable future by the additional production. Employment, income, taxes, etc., would depend on the demand for the quality of the reserves in the expansion areas.

4.17.3 Mitigation

Mitigation is not required.

4.18 Mineral Resources and Geology

4.18.1 Proposed Action, Direct and Indirect Impacts

Bentonite reserves, which lie within 50 feet of the surface, will be removed by ACC's

activities on Amendment #11 lands. Certain grades of bentonite, which are not considered mineable at this time or bentonite that is deeper than 50 feet may be mined in the future, if economically feasible. No other mineral resource would be affected.

4.18.1.1 Proposed Action, Cumulative Impacts

Mining of the bentonite, past, present, and future represents an irretrievable commitment of the resource. Once it is mined, processed and shipped, that bentonite is lost to future users. Once these reserves are used up, the company would have to discover more, re-mine bypassed ore or close the mine.

4.18.2 Alternative A (No Action), Direct and Indirect Impacts

Under this alternative, the bentonite reserves underlying Amendment #11 would not be developed. It would therefore, be available for future users. The mining of currently permitted lands would continue until reserves are depleted. That bentonite would be lost to future users.

4.18.2.1 Alternative A (No Action) Cumulative Impacts

The cumulative impacts would be those restricted to development of currently permitted reserves.

4.18.3 Mitigation

Additional mitigation is not needed.

Chapter 5

List of Preparers

5.1 Reviewers

Jo Stephen	Reclamation Specialist, Co-Project Lead, DEQ
Dan Benoit	Geologist, Project Lead - Minerals, Geology, Topography
Dex Hight	Hydrologist - Water Issues, Hazmat
Robert Mitchell	Soil Scientist - Soils and Air
Larry Apple	Biologist - Wildlife
Jody Fossum	Rangeland Management Specialist - Range Issues, Vegetation
Pam Wall	Realty Specialist - Lands and Realty, Transportation
Will Hubbell	BLM Archeologist - Cultural
Kathy Bockness	NEPA Coordinator – NEPA Review and Coordination
Crystal Moore	Administrative Assistant - Administrative Support
Joe Platz	Fisheries Biologist – Aquatic Life

Chapter 6

List of Agencies and Persons Consulted

Montana Bureau of Mines and Geology
Groundwater Information Center
Montana Tech
1300 West Park Street
Butte, MT 59701-8997

U. S. Environmental Protection Agency
Montana Operations Office
301 South Park, Drawer 10096
Helena, MT 59626-0096

National Climatic Data Center
151 Patton Avenue
Asheville, NC 28801-5001

Carter County Courthouse
Ekalaka, MT 59311

APPENDIX 1

Federal surface/Federal minerals

T. 9 S., R. 59 E., Carter County, Montana

Section 4:	NE4NE4SW4SW4	2.5 acres
	N2SE4SW4	20.0 acres
Section 5:	a portion of the E2SE4NW4 – N of Highway 212 ROW	8.8 acres
	S2SW4NE4 & S2NW4SW4NE4 – N of Highway 212 ROW	23.7 acres
	a portion of the S2SE4NE4	10.0 acres
	N2NW4SE4 – N of Highway 212 ROW	9.0 acres
	N2NE4SE4 & NE4SE4NE4SE4	22.5 acres
Section 10:	SE4NW4	40.0 acres
	SW4SW4NE4	10.0 acres
	NE4SW4	40.0 acres
	NW4SE4SW4 – north of Highway 212	1.3 acres
	NW4SE4	40.0 acres
	a portion of the NE4SE4	25.5 acres
	N2SE4SE4 and N2SE4SE4SE4	25.0 acres
Section 11:	a portion of the SW4NW4SW4	1.5 acres
	W2SW4SW4	20.0 acres
Total		299.8 acres

Private surface/Federal minerals

T. 9 S., R. 59 E., Carter County, Montana

Section 3:	SW4NW4SW4	10.0 acres
	SW4SW4	40.0 acres
	S2SE4SW4	20.0 acres
Section 4:	a portion of the NW4SW4	30.0 acres
	S2NE4SW4	20.0 acres
	S2NW4SE4	20.0 acres
	S2NE4SE4	20.0 acres
	N2SW4SE4	20.0 acres
	N2SE4SE4	20.0 acres
Section 10:	NE4NW4	40.0 acres
Total		240.0 acres

Private surface/Private minerals

T. 9 S., R. 59 E., Carter County, Montana

Section 10: N2NW4NW4

20.0 acres

E2E2NW4SW4 – north of Highway 212 (Not Fed Min)

7.7 acres

Total 27.7 acres

AMENDMENT #11 Total 567.5 acres

APPENDIX 2

Right-of-Way Stipulations

The right-of-way grant to be issued for the existing graveled and bladed ranch road would be issued under the authority of Title V of the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2776; 43 U.S.C. 1761) and subject to the terms and conditions in 43 CFR 2800 and American Colloid Company Amendment #11 Application and Plan of Operations, and subject to the stipulations listed below.

STIPULATIONS:

1. The holder shall construct, operate, and maintain the facilities, improvements, and structures within this right-of-way in strict conformity with American Colloid Company's Amendment #11 Application and Plan of Operations and the right-of-way application. Any relocation, additional construction, or use that is not in accord with the approved plan of operations, shall not be initiated without the prior written approval of the authorized officer. A copy of the complete right-of-way grant, including all stipulations and approved plan(s) of development, shall be made available to the authorized officer on the right-of-way area during construction, operation, and termination. Noncompliance with the above will be grounds for an immediate temporary suspension of activities if it constitutes a threat to public health and safety or the environment.
2. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.
3. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder(s) shall comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601, et seq.) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, Section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
4. The holder shall conduct all activities associated with the construction, operation, and termination of the right-of-way within the authorized limits of the right-of-way.

5. The holder shall seed all disturbed areas (as described in the Plan of Operations), using an agreed upon method suitable for the location. Seeding shall be repeated if a satisfactory stand is not obtained as determined by the authorized officer upon evaluation after the first growing season.
6. The holder shall be responsible for weed control on disturbed areas within the limits of the right-of-way. The holder is responsible for consultation with the authorized officer and/or local authorities for acceptable weed control methods (within the limits imposed in the grant stipulations).
7. *The holder shall coordinate with the parties holding authorized rights on the adjacent and affected land [such as other right-of-way holders].

* This non-standard stipulation was approved by the District Manager, which is the next higher level of Bureau line management, for right-of-way MTM-83461, on September 28, 1994.

References

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- USGS Survey Bulletin 1082-M, 1962, Bentonite Deposits of the Northern Black Hills District – Wyoming, Montana, and South Dakota.
- Olendorff, Richard R., Status, Biology, and Management of Ferruginous Hawks: A Review Boise, ID, U. S. Department of the Interior, Bureau of Land Management
- Knowles, Craig J., 1997, Ferruginous Hawk Use of Thompson Creek, Carter County, Montana. Boulder, MT: Fauna West Wildlife Consultants,
- Meyer, Merle P., Roberts, David A., Schwarzkoph, Willaim F., 1975, Four Seasons Wildlife and Wildlife Habitat Alzada Study. Helena, MT: Ecological Consulting Service,
- Montana Department of Environmental Quality. 2004. Fish Metric Analysis of Samples Collected from Thompson Creek 5/20/04. Unpublished report
- 1980, Terrestrial Ecology Baseline Study – Alzada, Montana U. S. Forest Service, Rocky Mountain Forest and Range Experiment Station, South Dakota School of Mines, Rapid City, SD.
- Wittenhagen, Keith W., 1991, 1991 Progress Report on the Ferruginous Hawk in Southeastern Montana, Miles City, MT.
- Wittenhagen, Keith W., 1992, 1992 Final Report on the Ferruginous Hawk in Southeastern Montana, Miles City, MT.
- Internet: Montana Natural Resource Information System